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TRANSACTIONS

OF

THE CLINICAL SOCIETY.

VOL. XI.

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NOTICE.

THE present Volume comprises the Proceedings of the Society during its Eleventh Session, October 1877 to May 1878.

The Council think it proper to state that the authors of the several communications are alone responsible for the statements, reasonings, and opinions contained in their respective papers.

53 BERNERS STREET, OXFORD STREET:
October 1878.

CONTENTS.

PAGE

Notice from the Council v

List of Illustrations xii

List of Presidents of the Society from its Formation . . xiv

List of Officers and Members of the Council during 1878 xv

List of Honorary Members of the Society xvi

List of Members of the Society xvii

Balance Sheet xxxvi

Communications:—

I. Cases to illustrate the behaviour of Carbolized Catgut Ligatures upon Human Arteries. By Thomas Bryant 1

II. Case of Hysteria, with Contraction of the Lower Limbs, Anæsthesia and Ischæmia, in a Boy. By Henry Thompson, M.D. 5

III. Case of Hysterical Anæsthesia of both Legs below the Knee. Treatment by Metallic Bands; Cure. By W. H. Broadbent, M.D. 13

IV. Case of Injury to the Lower Part of the Spinal Cord, followed by Wasting and Contraction of the Muscles of the Lower Extremities. By John Aikman, M.D. 16

228180

PAGE

V. Case of Cerebro-Spinal Lateral Sclerosis. By Thomas Stretch Dowse, M.D. 18

VI. Case of unusually large Calculi removed by External Incision from a Sac communicating with the Penile Urethra. By Edward Bellamy 22

VII. Case of large Urethral Calculus. By Sydney Jones 23

VIII. Case of Unilateral Gunshot Injury to the Spinal Cord. By W. R. Gowers, M.D. 24

IX. Case of Left Hemiplegia and Hemianæsthesia. By J. Burnley Walker, M.D., with remarks by W. H. Broadbent, M.D. 32

X. Two Cases of Severe Iodide of Potassium Eruption. By Tilbury Fox, M.D. 40

XI. Case of Popliteal Aneurysm, for which the Femoral Artery was ligatured twice. By Christopher Heath 49

XII. Case of Popliteal Aneurysm treated by Ligature of the Superficial Femoral Artery with Carbolized Gut, followed by the Formation of an Aneurysm at the seat of Ligature. By Thomas Smith 51

XIII. Case of Acute Suppurative Synovitis, Evacuation of the Pus, with Antiseptic Precautions: Recovery. By Osborne D. Marriott, M.B. . . 54

XIV. Case of Convulsions treated by Venesection. By W. H. Broadbent, M.D. 55

XV. Two Cases of true Subcutaneous Operation for Exostosis. By C. F. Maunder 59

XVI. Case of Lupus of the Face, treated by Linear Scarification, aided by Erasion. By Balmanno Squire, M.B. 61

PAGE

XVII. Case of Chorea complicated with Epilepsy in the Adult Male. By Julius Althaus, M.D. . . 62

XVIII. Case in which severe Hæmorrhage, following the operation for Cleft Palate, was stopped by Plugging the Posterior Palatine Canal. By Howard Marsh 71

XIX. Case of Spina Bifida successfully treated by Injection of Iodine. By A. Pearce Gould . . 75

XX. Cases treated by Sayre's Jacket. By Berkeley Hill 80

XXI. Severe Case of Erythema Multiforme, Œdematous and Hæmorrhagic. By Tilbury Fox, M.D. . . 85

XXII. Two Cases of Psoriasis, the one treated by Prolonged Daily Immersions, the other by an Ointment of Chrysophanic Acid. By Balmanno Squire, M.B. 90

XXIII. Case of Eruption from Bromide and Iodide of Potassium. By H. Radcliffe Crocker, M.D. . 95

XXIV. Two Cases of Cancer of the Breast. By T. W. Nunn 98

XXV. Note on Tendon Ligatures. By George W. Callender 103

XXVI. Case of Multiple Papillomatous Growths in the Larynx, extirpated by complete Laryngotomy, Removal of Vocal Cords, Preservation of Voice. By J. Burney Yeo and Joseph Lister . . . 104

XXVII. Case of Excision of the Lower Part of the Rectum. By Timothy Holmes 113

XVIII. Description of the Dissection of a Foot from which the Os Calcis had been removed by Subperiosteal [illegible]cision (in Vol. VIII. of the 'Transactions'). By [illegible]thy Holmes 117

PAGE

XXIX. Case of Unilateral Atrophy, with Muscular Spasm. By Frederick Taylor, M.D. 118

XXX. Case of Aneurysm of the Left Subclavian and Axillary Arteries, treated by Enforced Rest and a very limited Diet. By J. W. Hulke . 123

XXXI. Case demonstrating the value of Electro-Magnets for the Removal, or Displacement, of Iron or Steel Chips from within the Eye. By Macdonald McHardy 128

XXXII. On Hæmorrhagic Retinitis and its Connection with Gout and with Thrombosis of Veins. By Jonathan Hutchinson 132

XXXIII. Case of Rapid Effusion of Bloody Fluid into the right Pleural Cavity at the Age of 76. Paracentesis: Recovery. By W. H. Broadbent, M.D. 136

XXXIV. Case of Right Pleurisy with Effusion. Sudden Death. By W. H. Broadbent, M.D. 140

XXXV. Case of Bilateral Paralysis of the Posterior Crico-arytænoid Muscles. By Felix Semon, M.D. 141

XXXVI. Cases of Hammer Toes showing the relation of this condition to Spinal mischief. By T. W. Nunn . 153

XXXVII. Cases of Epulis treated by Electrolysis. By T. W. Nunn 157

XXXVIII. Anomalous Mottled Rash, accompanied by Pruritus, Factitious Urticaria, and Pigmentation. By A. Sangster, M.B. 161

XXXIX. Cases of Follicular Mal-Nutrition (Cacotrophia Folliculorum). By Tilbury Fox, M.D. . . 163

XL. Case of Ovariotomy in a Child aged Twelve Years. By Thomas Barlow, M.D., and Howard Marsh . 175

PAGE

XLI. Case in which an Irregular Obturator Artery was wounded in the Operation for Strangulated Femoral Hernia. By Arthur E. Barker . . 180

XLII. Case of Tinea Circinata, complicated with Tinea Versicolor. By Malcolm Morris . . . 186

XLIII. Fatal Case of Yellow Fever, occurring in London. By Alfred Leggatt and W. S. Greenfield, M.D. . 187

XLIV. Two Cases of Lupus. By W. Spencer Watson . 201

XLV. Case of imperfect Right Hemiplegia, with slight Aphasia, Optic Neuritis, &c. By Thomas Buzzard, M.D. 205

XLVI. Case of Abortive Herpes. By Alfred Sangster, M.B. 212

XLVII. The Sequel and Fatal Termination of a Case of Lymphatic Enlargement of the Right Leg and Thigh (in Vol. II. of the 'Transactions'). By W. H. Day, M.D. 214

XLVIII. Sequel of a Case of Cancer supervening on Ichthyosis of the Tongue of Twelve Years' Standing (in Vol. X. of the 'Transactions'). By George Brown 222

XLIX. Case of Gastrotomy for Acute Intestinal Obstruction. By W. Harrison Cripps. 224

L. Case in which Sudden Death followed the Operation of Tapping an Hydatid Cyst of the Liver. By Thomas Bryant 230

LI. Case in which Œsophagotomy was performed for the Impaction in the Œsophagus for Five Weeks of a set of Artificial Teeth. By W. A. McKeown, M.D. 233

LII. Observations on the Period of Incubation of Scarlet Fever, and of some other Diseases. By Charles Murchison, M.D. 238

INDEX 267

LIST OF ILLUSTRATIONS.

PLATES.

PAGE

I. Fig. 1–4, Arteries Tied by Carbolized Catgut Ligatures. Thomas Bryant 2

II. Figs. 1–4, Microscopical Sections of the Medulla Oblongata and Spinal Cord from a Case of Cerebro-Spinal Lateral Sclerosis. T. S. Dowse, M.D. 20

III. Chromolithograph: a severe Case of Iodide of Potassium Eruption. Tilbury Fox, M.D. 48

IV. Chromolithograph: two Cases of Retinitis Hæmorrhagica. Jonathan Hutchinson 132

V. Chromolithograph: Anomalous Mottled Rash, 'Urticaria Pigmentosa'? A. Sangster, M.D. 162

VI. Chromolithograph: Follicular Mal-nutrition 'Cacotrophia Folliculorum.' Tilbury Fox, M.D. 168

WOODCUTS.

Unilateral Gunshot Injury to the Spinal Cord; Contusion between the First and Second Cervical Nerves. W. R. Gowers, M.D. 27

Severe Hæmorrhage following Operation for Cleft Palate Stopped by Plugging the Posterior Palatine Canal. Figs. 1 & 2, Distribution of Descending Palatine Branch of the Internal Maxillary Artery. H. Marsh. 72

Bilateral Paralysis of the Posterior Crico-arytænoid Muscles. 1st, and Fig., Healthy Glottis during Phonation. 2nd, and Fig., Ditto during Deep Inspiration. 3rd, and Fig., Glottis in the Case of Paralysis. F. Semon, M.D. 147

PAGE

IMPERFECT RIGHT HEMIPLEGIA, WITH SLIGHT APHASIA, &c. FIGS. 1–4, SPHYGMOGRAPHIC TRACINGS OF RIGHT AND LEFT RADIALS. T. BUZZARD, M.D 208-9

ŒSOPHAGOTOMY FOR IMPACTION IN ŒSOPHAGUS FOR FIVE WEEKS OF A SET OF ARTIFICIAL TEETH. FIGS. 1 & 2, FRONT AND BACK VIEWS OF ARTIFICIAL TEETH, NATURAL SIZE. W. A. MCKEOWN, M.D. 236

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Orig Memb DUCKWORTH, DYCE, M.D., Assistant Physician to St. Bartholomew's Hospital: 11 Grafton Street, Bond Street, W. (C. 1875–7.)

ELECTED

Orig Memb DUFFIN, ALFRED B., M.D., Physician to King's College Hospital, Professor of Pathological Anatomy in King's College, London: 18 Devonshire Street, Portland Place, W. (C. 1872–4.)

1869 DUKE, OLLIVER THOMAS, Assistant Surgeon, Bengal Army, India.

Orig Memb DURHAM, ARTHUR EDWARD, Surgeon to, and Lecturer on Anatomy at, Guy's Hospital: 82 Brook Street, W. (C. 1867-9.)

Orig Memb EDIS, ARTHUR W., M.D., Assistant Obstetric Physician to the Middlesex Hospital: 22 Wimpole Street, Cavendish Square, W.

Orig Memb ERICHSEN, JOHN E., F.R.S., Holme Professor of Clinical Surgery in University College, and Senior Surgeon to University College Hospital: 6 Cavendish Place, Cavendish Square, W. (V.P. 1869–71.)

1876 EVANS, GEORGE HENRY, M.D.

1868 EVANS, JULIAN, M.B., Assistant Physician, Victoria Hospital for Sick Children: 123 Finborough Road, Redclyffe Square, S.W.

1877 EWART, WILLIAM, M.B.: 33 Somerset Street, Portman Square, W.

Orig Memb FAGGE, CHARLES HILTON, M.D., Assistant Physician to Guy's Hospital: 11 St. Thomas's Street, Southwark, S.E. (C. 1875–7.)

1868 FAIRBANK, FREDERICK ROYSTON, M.D.: 46 Hall Gate, Doncaster.

1868 FALCONER, RANDLE WILBRAHAM, M.D., Physician to the Royal United and Mineral Water Hospitals, Bath.

1872 FARQUHARSON, ROBERT, M.D., Assistant Physician to, and Lecturer on Materia Medica, at St. Mary's Hospital: 23 Brook Street, Grosvenor Square, W.

1872 FENWICK, J. C. J., M.B.: 16 Old Elvet, Durham.

1878 FIELD, GEORGE P., Aural Surgeon to St. Mary's Hospital: 31 Lower Seymour Street, Portman Square, W.

1876 FINLAY, DAVID WHITE, M.D., Medical Registrar, Middlesex Hospital: 21 Montagu Street, Portman Square, W.

1868 FISH, JOHN CROCKETT, M.B.: 92 Wimpole Street, Cavendish Square, W. (C. 1869-70.)

1872 FISHER, Frederic R., Assistant Surgeon to the Victoria Hospital for Sick Children: 79 Grosvenor Street, W.

1878 *FONMARTIN, HENRY DE, M.D. Par.: 474 King's Road, Chelsea, S.W.

ELECTED

1878 FOX, THOMAS COLCOTT, M.B. Lond., B A. Camb.: 14 Harley Street, Cavendish Square, W.

1872 FOX, TILBURY, M.D., Physician to the Skin Department of University College Hospital: 14 Harley Street, W.

Orig Memb FOX, WILSON, M.D., F.R.S., (V.P.) Physician Extraordinary to H.M. the Queen; Holme Professor of Clinical Medicine in University College, and Physician to University College Hospital: 67 Grosvenor Street, W. (C. 1873. V.P. 1878.)

1868 GANT, FREDERICK JAMES (C.), Surgeon to the Royal Free Hospital: 16 Connaught Square, W. (C. 1877–78.)

1868 GLOVER, JAMES GREY, M.D. (C.), Hon. Surgeon to the Holloway and North Islington Dispensary: 33 Compton Terrace, Islington, N. (C. 1878.)

1875 GODLEE, RICKMAN JOHN, M.S., M.B., Assistant Surgeon to University College Hospital: 22 Henrietta Street, Cavendish Square, W.

1875 GOODHART, JAMES FREDERICK, M.D., Assistant Physician to Guy's Hospital: 27 Weymouth Street, Portland Place, W.

1869 GOODRIDGE, HENRY FREDERICK AUGUSTUS, M.D., Physician to the Bath Royal United Hospital: Bath.

1877 GOULD, A. PEARCE, M.S., Assistant Surgeon to, and Lecturer on Anatomy at, the Westminster Hospital: 93 Gower Street, Bedford Square, W.C.

1871 GOVER, ROBERT M., M.B., Medical Officer to the Millbank Prison, Millbank, S.W.

1875 GOWERS, WILLIAM RICHARD, M.D., Assistant Physician to University College Hospital: 50 Queen Anne Street, Cavendish Square, W.

1868 GREEN, T. HENRY, M.D. (C.), Physician to, and Lecturer on Pathology at, the Charing Cross Hospital: 74 Wimpole Street, W. (C. 1877–78.)

1875 GREENFIELD, WILLIAM SMITH, M.D., Assistant Physician to St. Thomas's Hospital: 15 Palace Road, Albert Embankment, S.E.

Orig Memb GREENHALGH, ROBERT, M.D., 72 Grosvenor Street, W.

Orig Memb GREENHOW, EDWARD HEADLAM, M.D., F.R.S. (*Treasurer*), Physician to the Middlesex Hospital: 14A Manchester Square, W. (T. 1867–78.)

1874 GRIGG, WILLIAM CHAPMAN, M.D., Assistant Obstetric Physician to the Westminster Hospital; Physician to the In-Patients, Queen Charlotte's Lying-in Hospital; Assistant Physician to the Victoria Hospital for Children: 6 Curzon Street, Mayfair, W.

ELECTED

1868 †GUENEAU DE MUSSY, HENRI, M.D.: 15 Rue du Cirque, Paris.

Orig Memb GULL, Sir WILLIAM WITHEY, Bart., M.D., D.C.L., F.R.S., Physician Extraordinary to the Queen: 74 Brook Street, W. (V.P. 1868–70, P. 1871–2.)

1870 GWYNN, EDMUND, M.D.: 6 Hampstead Hill Gardens, N.W.

Orig Memb HABERSHON, SAMUEL OSBORNE, M.D. (V.P.), Physician to Guy's Hospital: 70 Brook Street, W. (C. 1873. V.P. 1878.)

1875 HALE, C.D.B.: 87 Gloucester Road, South Kensington, S.W.

1878 HAMILTON, J. LAWRENCE, L.R.C.P. Ed.: 34 Gloucester Terrace, Hyde Park, W.

1873 HARLEY, GEORGE, M.D., F.R.S.: 25 Harley Street, Cavendish Square, W.

Orig Memb HARLEY, JOHN, M.D., F.L.S., Assistant Physician to St. Thomas's Hospital: 39 Brook Street, Grosvenor Square, W. (C. 1875.)

1872 HARRIS, HENRY, M.D.: Trengweath, Redruth, Cornwall.

Orig Memb HART, ERNEST: 37 Great Queen Street, W.C. (C. 1867–8.)

1869 HAWARD, J. WARRINGTON (C.), Assistant Surgeon to St. George's Hospital; Assistant Surgeon to the Hospital for Sick Children: 5 Montagu Street, Portman Square, W. (C. 1876–78.)

1868 HAY, THOMAS B.: Christ Church, New Zealand.

Orig Memb HEATH, CHRISTOPHER (V.P.), Surgeon to University College Hospital, and Holme Professor of Clinical Surgery in University College: 36 Cavendish Square, W. (C. 1867–71, V.P. 1876–78.)

1868 HESLOP, THOMAS PRETIOUS, M.D., Physician to the Children's Hospital, Birmingham.

1868 HEWAN, ARCHIBALD, M.D.: 9 Chester Square, S.W.

Orig Memb HEWETT, PRESCOTT GARDNER, F.R.S., Surgeon Extraordinary to H.M. the Queen; Consulting Surgeon to St. George's Hospital: 1 Chesterfield Street, Mayfair, W. (V.P. 1869–71, P. 1873–4.)

Orig Memb HEWITT, GRAILY, M.D. (C.), Professor of Midwifery in University College, and Obstetric Physician to University College Hospital: 36 Berkeley Square, W. (C. 1878).

ELECTED

Orig Memb HICKS, J. BRAXTON, M.D., F.R.S., F.L.S., Physician Accoucheur to, and Lecturer on Midwifery and the Diseases of Women and Children at, Guy's Hospital: 24 George Street, Hanover Square, W. (C. 1875–77.)

1868 HILL, BERKELEY, M.B., Professor of Clinical Surgery in University College, London, Surgeon to University College Hospital, and Surgeon to the Lock Hospital: 55 Wimpole Street, W. (C. 1870–1.)

1868 HILL, THOMAS HARVEY: 4 Stanhope Terrace, Bayswater, W.

1874 HOLDERNESS, WILLIAM BROWN, Surgeon to the Huntingdon County Hospital: Wykeham House, Huntingdon.

1868 †HOLMAN, CONSTANTINE, M.D.: Reigate, Surrey.

1868 HOLMAN, WILLIAM HENRY, M.B.: 68 Adelaide Road South, Hampstead, N.W.

Orig Memb HOLMES, TIMOTHY, Surgeon to, and Lecturer on Surgery at, St. George's Hospital; Surgeon-in-Chief to the Metropolitan Police Force: 18 Great Cumberland Place, Hyde Park, W. (C. 1867–9, V.P. 1873–5.)

Orig Memb HOLT, BARNARD WIGHT, Consulting Surgeon to, and Lecturer on Clinical Surgery at, the Westminster Hospital; Medical Officer of Health for Westminster: 14 Savile Row, W.

Orig Memb HOLTHOUSE, CARSTEN, Surgeon to, and Lecturer on Surgery at, the Westminster Hospital; Consulting Surgeon to the South London Ophthalmic Hospital: 15 George Street, Hanover Square, W. (C. 1870–2.)

1878 HOOD, DONALD WILLIAM CHARLES, M.D.: 43 Green Street, Park Lane, W.

1873 HOPE, WILLIAM, M.D., Senior Physician to Queen Charlotte's Lying-in Hospital: 56 Curzon Street, Mayfair, W.

1871 HOUGHTON, HENRY G., L.K.Q.C.P. Ireland: 6 Mount Street, Grosvenor Square, W.

1876 HOWSE, HENRY GREENWAY, M.S., Surgeon to Guy's Hospital, and to the Evelina Hospital for Sick Children: 10 St. Thomas's Street, S.E.

Orig Memb HULKE, JOHN WHITAKER, F.R.S. (V.P.), Surgeon to, and Lecturer on Surgery at, the Middlesex Hospital, and Surgeon to the Royal London Ophthalmic Hospital: 10 Old Burlington Street, W. (C. 1867–9. V.P. 1878.)

Elected	
Orig Memb	Humphry, George Murray, M.D., F.R.S., Professor of Anatomy in the University of Cambridge, and Surgeon to Addenbrooke's Hospital. Cambridge. (V.P. 1867–70.)
1871	†Hunt, Ezra: 18 Belmont, Bath.
Orig Memb	Hutchinson, Jonathan, Surgeon to, and Lecturer on Surgery at, the London Hospital; Surgeon to the Hospital for Diseases of the Skin, and Surgeon to the Royal London Ophthalmic Hospital: 15 Cavendish Square, W. (C. 1867–8, V.P. 1875–76.)
1875	Irvine, James Pearson, M.D., Assistant Physician to, and Lecturer on Forensic Medicine at the Charing Cross Hospital: 3 Mansfield Street, Cavendish Square, W.
Orig Memb	Jackson, J. Hughlings, M.D., Physician to, and Lecturer on Physiology at, the London Hospital; Physician to the National Hospital for the Paralysed and Epileptic: 3 Manchester Square, W. (C. 1872–3.)
1877	Jacobson, Walter Hamilton Acland, M.B., F.R.C.S.: 31 Finsbury Square.
Orig Memb	Jenner, Sir William, Bart., M.D., K.C.B., D.C.L., F.R.S., Physician in Ordinary to H.M. the Queen and to H.R.H. the Prince of Wales; Physician to University College Hospital: 63 Brook Street, W. (V.P. 1867–70, P. 1875–6.)
1875	Jessett, Frederick Bowreman: Pier Road, Erith, Kent.
Orig Memb	Johnson, George, M.D., F.R.S., Physician to King's College Hospital: 11 Savile Row, W. (V.P. 1874–6.)
Orig Memb	Jones, Sydney, M.B., Surgeon to, and Lecturer on Surgery at, St. Thomas's Hospital: 16 George Street, Hanover Square, W. (C. 1867–8.)
1872	Jones, Thomas R., M.D., Assistant Physician, Victoria Hospital for Sick Children: 19 Chapel Street, Belgrave Square, S.W.
1876	Jordan, Furneaux, Surgeon to the Queen's Hospital, Birmingham: 22 Colmore Row, Birmingham.
Orig Memb	Kelly, Charles, M.D., Medical Officer of Health for the West Sussex District: Worthing, Sussex.
1868	Kesteven, William B., M.D.: 401 Holloway Road, N. (C. 1870–2.)
1878	Lacey, Thomas Warner: 196 Burrage Road, Plumstead, E.
1873	Lacy, C. de Lacy, 5 Ovington Square, Brompton
1868	Langmore, John C., M.B.: 20 Oxford Terrace, Hyde Park, W. (C. 1872–5.)

ELECTED

Orig Memb LANGTON, JOHN (C.), Assistant Surgeon to, and Demonstrator of Anatomy at, St. Bartholomew's Hospital: 2 Harley Street, W. (C. 1878.)

1869 LAWRENCE, JAMES E.: Geraldine Lodge, East Hill, Wandsworth, S.W.

Orig Memb LAWSON, GEORGE, Surgeon to, and Joint Lecturer on Surgery at, the Middlesex Hospital, and Surgeon to the Royal London Ophthalmic Hospital: 12 Harley Street, W. (S. 1871–3, C. 1874–6.)

1869 LEACH, HARRY, Medical Officer of the Port of London: 12 Rutland Park Villas, Catford Bridge, S.E.

1877 LEDIARD, HENRY AMBROSE, M.D., Cleveland Street Asylum: 42 Cleveland Street, Fitzroy Square, W.

1876 LEE, ALFRED ROBERT: 30 Queen Street, Cheapside, E.C.

Orig Memb LEE, HENRY, Consulting Surgeon to St. George's Hospital: 9 Savile Row, W. (V.P. 1870–2.)

1874 LEE, ROBERT JAMES, M.D., Assistant Physician to the Hospital for Sick Children: 6 Savile Row, W.

1877 LEES, DAVID B., M.D., Assistant Physician to Charing Cross Hospital, and to the Hospital for Sick Children: Thurloe House, Thurloe Square, S.W.

1877 LEGGATT, ALFRED: 13 William Street, Lowndes Square, S.W.

1878 LISTER (JOSEPH), F.R.S., Professor of Clinical Surgery at King's College, and Surgeon to King's College Hospital: 12 Park Crescent, Regent's Park, W.

1868 LITTLE, LOUIS STROMEYER: China.

1875 LIVEING, EDWARD, M.D.: 52 Queen Anne Street, Cavendish Square, W.

1872 LIVEING, ROBERT, M.D., Lecturer on Dermatology at the Middlesex Hospital: 11 Manchester Square, W.

1876 LONGHURST, ARTHUR EDWIN TEMPLE, M.D.: 13 Wilton Street, S.W.

1876 LOWNE, BENJAMIN THOMPSON: 49 Colville Gardens, Bayswater, W.

1876 LUCAS, R. CLEMENT, M.B., M.S., Assistant Surgeon to Guy's Hospital: 4 St. Thomas's Street, S.E.

1871 MACCORMAC, WILLIAM (C.), Surgeon to, and Lecturer on Surgery at, St. Thomas's Hospital: 13 Harley Street, W. (C. 1877–78.)

Orig Memb MACKENZIE, MORELL, M.D., Physician to the Hospital for Diseases of the Throat: 19 Harley Street, Cavendish Square, W.

1877 MACLEAN, THOMAS EDWIN, M.B., B.S.

ELECTED

1875 MACNAMARA, CHARLES, Surgeon to the Westminster Hospital: 13 Grosvenor Street, W.

1874 MAHOMED, FRED. AKBAR, M.D., Medical Registrar, Guy's Hospital: 31 Lower Seymour Street, Portman Square, W.

Orig Memb †MARCET, WILLIAM, M.D., F.R.S.: Villa Bianca, Cannes. (C. 1867–9.)

1868 MARSH, F. HOWARD (*Hon. Secretary*), Assistant Surgeon to St. Bartholomew's Hospital: 36 Bruton Street, Berkeley Square, W. (C. 1876–77. S. 1878.)

1875 MARSHALL, F. J., Resident Medical Officer, St. George's Hospital, W.

Orig Memb MAUNDER, CHARLES F., Surgeon to, and Lecturer on Clinical Surgery, and Demonstrator of Operative Surgery at, the London Hospital: 16 Queen Anne Street, W. (C. 1870–1.)

1868 †MAY, EDWARD HOOPER, M.D.: High Cross, Tottenham, Middlesex, N.

1868 MEADOWS, ALFRED, M.D., Physician Accoucheur to, and Lecturer on Midwifery at, St. Mary's Hospital: 27 George Street, Hanover Square, W. (C. 1871–4.)

1876 MELLADEW, H. F. L., M.D., Surgeon, Royal Horse Guards: Regent's Park Barracks, N.W.

1873 MICKLE, WILLIAM JULIUS, M.D., Physician Superintendent, Grove Hall Asylum, Bow, E.

1877 MILNER, EDWARD, Surgical Registrar, St. Bartholomew's Hospital: 32 New Cavendish Street, Portland Place, W.

1874 MORGAN, JOHN HAMMOND: 12 Chapel Street, Park Lane, W.

1877 MORRIS HENRY, M.B., Senior Assistant Surgeon to, and Lecturer on Anatomy at, the Middlesex Hospital: 2 Mansfield Street, Portland Place, W.

1877 MORRIS, MALCOLM ALEX.: 63 Montagu Square, W.

Orig Memb MOXON, WALTER, M.D., F.L.S., Physician to, and Lecturer on Pathology and Demonstrator of Morbid Anatomy at, Guy's Hospital: 6 Finsbury Circus, E.C. (C. 1874–6.)

Orig Memb MURCHISON, CHARLES, M.D., LL.D., F.R.S. (V.P.), Physician to, and Lecturer on Medicine at, St. Thomas's Hospital, Consulting Physician to the London Fever Hospital: 79 Wimpole Street, W. (C. 1867–9, V.P. 1876–78.)

1875 MURPHY, SHIRLEY F., London Fever Hospital, Liverpool Road, Islington, N.

ELECTED

1868 MYERS, ARTHUR BOWEN RICHARDS (C.), Surgeon to 1st Battalion of the Coldstream Guards: Vincent Square, Westminster, S.W. (C. 1877–78.)

1873 MYRTLE, ANDREW S., M.D.: Harrogate.

1874 NANKIVELL, ARTHUR WOLCOT, Resident Surgeon, St. Bartholomew's Hospital, Chatham.

1875 NETTLESHIP, EDWARD, Ophthalmic Surgeon to, and Lecturer on Ophthalmology at St. Thomas's Hospital: 4 Wimpole St., Cavendish Sq., W.

Orig Memb NORTON, ARTHUR TREHERN, Surgeon to, and Lecturer on Anatomy at, St. Mary's Hospital: 6 Wimpole Street, W. (C. 1874–6.)

Orig Memb NUNN, THOMAS WILLIAM, Surgeon to the Middlesex Hospital: 8 Stratford Place, Oxford Street, W. (C. 1873–4.)

Orig Memb OGLE, JOHN WILLIAM, M.D., Consulting Physician to St. George's Hospital: 30 Cavendish Square, W. (C. 1867–8.)

1868 †OGLE, WILLIAM, M.D., Physician to the Derbyshire General Infirmary: 98 Friar Gate, Derby.

1869 OLDFIELD, E., M.D.: Surinam.

1868 OPPERT, FRANCIS, M.D.: Germany.

1877 ORD, WILLIAM MILLER, M.B., Physician to, and Lecturer on Medicine at, St. Thomas's Hospital: 7 Brook Street, Hanover Square, W.

1876 OTTLEY, WALTER, M.B., Demonstrator of Anatomy at University College: 7 Nottingham Place, W.

1877 OWEN, ISAMBARD, M.B., Medical Registrar, St. George's Hospital: 41 Gloucester Gardens, Bishop's Road, W.

1875 PAGE, HERBERT W., M.C., M.B., Assistant Surgeon to St. Mary's Hospital: 28 New Cavendish Street, W.

Orig Memb PAGET, Sir JAMES, Bart., D.C.L., LL.D., F.R.S., Sergeant-Surgeon Extraordinary to H.M. the Queen; Surgeon in Ordinary to H.R.H. the Prince of Wales; Consulting Surgeon to St. Bartholomew's Hospital: 1 Harewood Place, Hanover Square, W. (V.P. 1867–8, P. 1869–70.)

1873 PARKER, ROBERT WILLIAM: 8 Old Cavendish Street, W.

Orig Memb PAVY, FREDERICK WILLIAM, M.D., F.R.S., Physician to Guy's Hospital: 35 Grosvenor Street, W. (C. 1869–71.)

Orig Memb PEACOCK, THOMAS BEVILL, M.D., Physician to St. Thomas's Hospital, Consulting Physician to the City of London Hospital for Diseases of the Chest: 20 Finsbury Circus, E.C. (C. 1867–8, V.P. 1869–71.)

[illegible]	Phillips, Charles Douglas F., M.D.: 107 Lancaster Gate, Hyde Park, W.
Orig Memb	Pick, Thomas Pickering (C.), Surgeon to, and Lecturer on Anatomy at, St. George's Hospital; Surgeon to the Belgrave Hospital for Children: 13 South Eaton Place, Eaton Sq., S.W. (S. 1874–7. C. 1878.)
1871	†Playne, Alfred, M.B.: Maidenhead.
Orig Memb	Pollock, A. Julius, M.D. (C.), Physician to the Charing Cross Hospital; Physician to the Foundling Hospital: 85 Harley Street, Cavendish Square, W. (C. 1877–78.)
1875	Pollock, George David, Surgeon in Ordinary to H.R.H. the Prince of Wales; Surgeon to St. George's Hospital: 36 Grosvenor Street, W.
1868	Pollock, James Edward, M.D. (C.)., Physician to the Hospital for Consumption and Diseases of the Chest: 52 Upper Brook Street, Grosvenor Square, W. (C. 1878.)
1871	Poore, George Vivian, M.D., Assistant Physician to University College Hospital: 30 Wimpole Street, W.
1873	Port, Heinrich, M.D., Assistant Physician to the German Hospital: Finsbury Square, E.C.
Orig Memb	Powell, R. Douglas, M.D. (C.), Physician to the Hospital for Consumption and Diseases of the Chest, Brompton, Assistant Physician to the Middlesex Hospital: 15 Henrietta Street, Cavendish Square, W. (C. 1874–6.)
1868	Prentis, Charles, Surgeon Major, Bengal Medical Service: 11 Upper Phillimore Place, Kensington.
Orig Memb	Quain, Richard, M.D., F.R.S., Consulting Physician to the Hospital for Consumption and Diseases of the Chest: 67 Harley Street, W. (C. 1867–9.)
Orig Memb	Ramskill, J. Spence, M.D., Physician to, and Lecturer on Medicine at, the London Hospital; Senior Physician to the National Hospital for the Paralysed and Epileptic: 5 St. Helen's Place, Bishopsgate Street, E.C.
1873	Ransford, Gifford: 27 Gloucester Place, Hyde Park, W.
1868	Rasch, Adolphus A., M.D., Physician for Diseases of Women to the German Hospital: 7 South Street, Finsbury Square, E.C.
1877	Rayner, Henry, M.D., Lecturer on Mental Diseases at St. Thomas's Hospital: Middlesex County Lunatic Asylum, Hanwell, W.
1874	Ree, Frederick.

ELECTED

Orig Memb REES, GEORGE OWEN, M.D., F.R.S., Consulting Physician to Guy's Hospital: 26 Albemarle Street, W. (V.P. 1871–3.)

1868 REEVES, HENRY A., Assistant Surgeon to the London Hospital: 8 Grosvenor Street, W.

1868 RENDLE, JAMES D., M.D., Medical Officer to the Government Convict Prison, Brixton: Park Hill, Clapham Park, S.W. (C. 1869–70.)

Orig Memb REYNOLDS, JOHN RUSSELL, M.D., F.R.S., Examiner in Medicine at the University of London; Consulting Physician to University College Hospital: 38 Grosvenor Street, W. (C. 1867–8.)

1868 RICE, MICHAEL W., M.D. (C.): 34 Cadogan Place, S.W. (C. 1876–78.)

Orig Memb RINGER, SYDNEY, M.D., Professor of the Principles and Practice of Medicine in University College, and Physician to University College Hospital: 15 Cavendish Place, W. (C. 1871–2.)

1877 RIVINGTON, WALTER, M.S., M.B., Surgeon to, and Lecturer on Anatomy at, the London Hospital: 22 Finsbury Square, E.C.

1873 †ROBERTS, DAVID LLOYD, M.D., Physician to St. Mary's Hospital, Manchester: 23 St. John Street, Manchester.

1876 ROBINSON, FREDERICK, M.D., Surgeon-Major, Scots Fusilier Guards: 41 Claverton Terrace, St. George's Road, S.W.

1875 ROGERS, WILLIAM RICHARD, M.D.: 56 Berners Street, Oxford Street, W.

1877 ROTH, BERNARD M.S., M.D.: 48 Wimpole Street, W.

Orig Memb ROUSE, JAMES, Surgeon to St. George's Hospital, and to the Royal Ophthalmic Hospital, Charing Cross: 2 Wilton Street, Grosvenor Place, S.W. (C. 1875–77.)

1874 ROWLAND, EDWARD R.: Pelham Lodge, Isleworth.

1868 SANDERSON, HUGH JAMES, M.D.: 26 Upper Berkeley Street, W.

Orig Memb SANDERSON, JOHN BURDON, M.D., F.R.S., Jodrell Professor of Human Physiology in University College: 26 Gordon Square, W.C. (S. 1867–9, C. 1870, V.P. 1871–3.)

1873 SAVAGE, GEORGE HENRY, M.D.: Bethlehem Royal Hospital, Lambeth Road, S.E.

1877 SEATON, EDWARD, M.D., Physician to the Nottingham General Dispensary: 8 Oxford Street, Nottingham.

1869 SEDGWICK, LEONARD WILLIAM, M.D.: 2 Gloucester Terrace, Hyde Park, W.

ELECTED

1878 SEMON, FELIX, M.D.: 6 Chandos Street, Cavendish Square, W.

1875 SHERWOOD, ARTHUR PAUL, St. George's Hospital.

1876 SHUTER, JAMES L., M.B.: St. Bartholomew's Hospital, and Lawn House, Tufnell Park Road, Holloway, N.

Orig Memb SIBLEY, SEPTIMUS WILLIAM: 4 Savile Row, W. (C. 1871–4.)

Orig Memb SIMON, JOHN, D.C.L., F.R.S., Consulting Surgeon to St. Thomas's Hospital: 40 Kensington Square, W. (V.P. 1867–70.)

1873 SIMPSON, GEORGE A. MALCOLM, M.D., C.M.: Hampstead Lane, Highgate, N.

1877 SKINNER, WILLIAM A., 45 Lower Belgrave Street, Eaton Square, S.W.

1872 SLIGHT, GEORGE, M.D.: 25 Brewer St., Regent St., W.

1876 SMITH, BARTON HENRY LIDDELL, M.B., C.M.: 29 Charles Street, Berkeley Square, W.

1875 SMITH, GILBART, M.A., M.B., Assistant Physician to the London Hospital; Physician to the Royal Hospital for Diseases of the Chest, City Road: 68 Harley Street, Cavendish Square, W.

1868 SMITH, HEYWOOD, M.D., Physician to the Hospital for Women: 2 Portugal Street, Grosvenor Square, W.

1868 SMITH, PROTHEROE, M.D., Physician to the Hospital for Women: 42 Park Street, Grosvenor Square, W.

Orig Memb SMITH, THOMAS, Surgeon to, and Lecturer on Clinical Surgery at, St. Bartholomew's Hospital, and Surgeon to the Hospital for Sick Children: 5 Stratford Place, Oxford Street, W. (C. 1869–71.)

1873 SMITH, WILLIAM JOHNSON, Surgeon to the Seamen's Hospital, Greenwich, S.E.

1873 SMITH, WILLIAM WILBERFORCE, M.D.: 2 Eastbourne Terrace, Bishop's Road, W.

1868 SNOW, WILLIAM V., M.D.: Richmond Gardens, Bournemouth.

Orig Memb SOUTHEY, REGINALD, M.D (C.), Physician to, and Lecturer on Forensic edicine and Hygiene at Bartholomew's Hos 6 Harley Street, Cav Square, W. (C. 1 1876–78, S. 1873

1876 SQUIRE, BALMANNO, M Weymouth Str Place, W.

ELECTED

Orig Memb STEWART, ALEXANDER PATRICK, M.D., Consulting Physician to the Middlesex Hospital: 75 Grosvenor Street, W. (V.P. 1872 74.)

1871 STEWART, WILLIAM EDWARD: 16 Harley Street, Cavendish Square, W.

1874 STIRLING, EDWARD C., M.B., Assistant Surgeon to St. George's Hospital: 60 Great Cumberland Place, Hyde Park, W.

1872 SUTHERLAND, HENRY, M.D., Lecturer on Insanity, Westminster Hospital: 6 Richmond Terrace, Whitehall, S.W.

1868 SUTRO, SIGISMUND, M.D., Senior Physician to the German Hospital: 37A Finsbury Square, E.C.

Orig Memb SUTTON, HENRY GAWEN, M.B., (C.), Physician to, and Lecturer on Medicine at, the London Hospital; and Physician to the City of London Hospital for Diseases of the Chest: 9 Finsbury Square, E.C. (C. 1878.)

1876 SYMONDS, HORATIO P.: 35 Beaumont Street, Oxford.

1868 TATHAM, JOHN, M.D., Assistant Physician to the Hospital for Consumption and Diseases of the Chest: 1 Wilton Place, Knightsbridge, S.W.

1878 TAYLER, FRANCIS THOMAS, B.A., M.B., 224 Lewisham High Road, S.E.

1875 TAYLOR, FREDERICK, M.D., Assistant Physician to Guy's Hospital: 15 St. Thomas's Street, Southwark, S.E.

Orig Memb TEEVAN, WILLIAM F., Surgeon to the West London Hospital: 10 Portman Square, W.

Orig Memb THOMPSON, EDMUND SYMES, M.D., Physician to the Hospital for Consumption and Diseases of the Chest; Gresham Professor of Medicine: 33 Cavendish Square, W.

Orig Memb THOMPSON, Sir HENRY, Knt., Surgeon Extraordinary to H.M. the King of the Belgians; Emeritus Professor of Clinical Surgery in University College: 35 Wimpole Street, W. (C. 1867–8.)

Orig Memb THOMPSON, HENRY, M.D., Fellow of St. John's College, Cambridge; Senior Physician to the Middlesex Hospital: 53 Queen Anne Street, W. (V.P. 1875–77.)

THORNTON, WILLIAM PUGIN, Surgeon to the Hospital for Diseases of the Throat; Surgeon to the Marylebone Dispensary: 42 Devonshire Street, Portland Place, W.

THRU[illegible] D

Medical Superintendent
the Paralysed and Epi-
eet, W.

ELECTED

1874 TRAVERS, WILLIAM: 2 Phillimore Gardens, Kensington, W.

1877 TWEEDY, JOHN, 33 Harley Street, Cavendish Square, W.

1868 VENNING, EDGCOMBE (C.), Assistant Surgeon, 1st Life Guards: 87 Sloane Street, S.W. (C. 1876–78.)

1876 WADHAM, WILLIAM, M.D., Physician to, and Lecturer on Medical Jurisprudence, at St. George's Hospital: 14 Park Lane, W.

1868 WAGSTAFFE, WILLIAM WARWICK (C.), Assistant Surgeon to St. Thomas's Hospital: 2 Palace Road, Albert Embankment, Westminster Bridge, S.E. (C. 1878.)

1869 WALKER, JOSEPH, Dental Surgeon to the Westminster Hospital: 22 Grosvenor Street, W.

1875 WALSHAM, WILLIAM J., Demonstrator of Anatomy and Operative Surgery at St. Bartholomew's Hospital: 27 Weymouth Street, Portland Place, W.

1870 WARWICK, RICHARD ARCHER, M.D., Surgeon to the Richmond Infirmary: 5 Hill Rise, Richmond, S.W.

1876 WATERS, JOHN H., M.D.: 101 Jermyn Street, St. James's, S.W.

1868 WATKINS, EDWIN T., M.D.: 61 Guilford Street, W.C.

Orig Memb WATSON, WILLIAM SPENCER, M.B., Surgeon to the Great Northern Hospital; Surgeon to the Royal South London and to the Central London Ophthalmic Hospitals: 7 Henrietta Street, Cavendish Square, W.

Orig Memb WEBER, HERMANN, M.D., Physician to the German Hospital: 10 Grosvenor Street, W. (C. 1867–71, V.P. 1873–5.)

1876 WEIR, ARCHIBALD, M.D., St. Mungho's, Great Malvern.

1869 WELLS, J. SOELBERG, M.D., Professor of Ophthalmology at King's College; Ophthalmic Surgeon to King's College Hospital; and Surgeon to the Royal London Ophthalmic Hospital, Moorfields: 16 Savile Row, W. (C. 1875–7.)

1868 WELLS, THOMAS SPENCER, Surgeon in Ordinary to H.M.'s Household; Surgeon to the Samaritan Free Hospital: 3 Upper Grosvenor Street, W. (C. 1873.)

1874 WHEELHOUSE, CLAUDIUS GALEN, Senior Surgeon to the Leeds General Infirmary, and Lecturer on Surgery, Leeds Medical School: Hilary Place, Leeds.

1868 WHIPHAM, THOMAS TILLYER, M.B. (C.), Physician to St. George's Hospital: 37 Green Street, Grosvenor Square, W. (C. 1878).

ELECTED

1874 WHISTLER, W. M., M.D.: 28 Wimpole Street.

1871 WIGHT, GEORGE, M.B., C.M.: 428 Liverpool Road, N.

Orig Memb WILKS, SAMUEL, M.D., F.R.S., Physician to, and Lecturer on Medicine at, Guy's Hospital: 77 Grosvenor Street, W. (C. 1871–2.)

Orig Memb WILLETT, ALFRED, Assistant Surgeon to St. Bartholomew's Hospital: 36 Wimpole Street, W. (C. 1872–5.)

Orig Memb WILLIAMS, CHARLES THEODORE, M.D., (C.) Physician to the Hospital for Consumption and Diseases of the Chest: 47 Upper Brook Street, Grosvenor Square, W. (C. 1877–78.)

1870 WILLIAMS, WILLIAM RHYS, M.D., Bethlehem Royal Hospital, Lambeth Road, S.E.

1876 WILLIAMSON, JAMES MANN, M.D.: Ventnor, Isle of Wight.

Orig Memb WILLIS, FRANCIS, M.D.: Braceborough, Stamford.

1868 WILTSHIRE, ALFRED, M.D , Joint Lecturer on Obstetrics, and Assistant Physician-Accoucheur, St. Mary's Hospital: 57 Wimpole Street, W.

1872 YEO, J. BURNEY, M.D., Physician to King's College Hospital, Assistant Physician to the Brompton Hospital for Consumption: 44 Hertford Street, May Fair, W.

CLINICAL SOCIETY OF LONDON.—BALANCE SHEET 1876–77.

1876		£	s.	d.	1877		£	s.	d.
	To balance from last account	164	19	0		By purchase of £50 Consols	48	5	0
	„ Arrears of subscriptions for 1875–76	4	4	0		„ cost of printing, binding, and illustrating Vol. X. of 'Transactions'	111	16	6
	„ Subscriptions for 1876–77	218	8	0		„ Royal Medical and Chirurgical Society for use of rooms, &c.	47	5	0
	„ Admission fees from 26 new resident members	54	12	0		„ Refreshments and attendance at meetings	31	10	0
	„ Admission fees from 3 new non-resident members	6	6	0		„ Printing, stationery, postages, &c.	8	17	0
	„ One composition fee for 'Transactions'	3	3	0		„ Mr. Wheatley for secretarial work, index, &c.	8	8	0
	„ January dividends on £350 Consols	5	3	9		„ Collection of subscriptions	9	14	0
	„ July dividends on £400 Consols	5	18	6		„ Cost of advertising, and Messrs. Longmans' commission on sale of 'Transactions'	7	15	11
	„ Sale of 'Transactions'	22	13	0		Balance in Treasurer's hands	211	15	10
		£485	7	3			£485	7	3

Amount of Stock standing in the names of the Trustees, January 1, 1878, £400 3 per cent. Consols.

E. HEADLAM GREENHOW, M.D., *Treasurer.*

Audited and found correct { THOMAS WHIPHAM, JOHN H. MORGAN, } *Auditors.*

THOMAS P. PICK, *Hon. Sec.*

COMMUNICATIONS.

I.—*Cases to illustrate the behaviour of Carbolized Catgut Ligatures upon Human Arteries.* By THOMAS BRYANT. *Read October* 12, 1877.

THE carbolized catgut, as made by the Apothecaries' Company, Virginia Street, Glasgow, has been so freely employed by surgeons since it was brought before the profession in 1869 by Professor Lister—then of Glasgow, and now of London—that it would seem the time had fairly come for some definite expression of opinion as to its behaviour when applied as a ligature to an artery; for all surgeons should know what they are doing when following any precise line of action, and understand the *modus operandi* of the surgical appliances they use.

It is, therefore, with the view of helping the solution of this question that I have to-night brought before this Society such pathological and clinical facts as my practice has supplied me with, these facts enabling me to draw certain conclusions upon the point in question, which I hope the experience of the members of this Society will be able to support or refute. And first of all as to my pathological facts, as shown by the four preparations and drawings from them, which I now hand round. (Plate 1.)

Preparation 1, with drawing, represents the external iliac artery of a man who died *fourteen hours* after the application of the ligature to the vessel.

The patient, 29 years of age, was admitted into Guy's Hospital, with ulcerative endocarditis and an aneurysm of the right common femoral artery. The aneurysm burst, and as the man's life was threatened from concealed hæmorrhage, I was induced to apply a ligature to his external iliac artery. The operation, however, failed to save life, and

12

the man died from heart-affection fourteen hours subsequently. In the operation I employed a medium-sized ligature, and did not employ more force than I thought sufficient to occlude the vessel; and what do we find? That the inner and middle coats of the artery are completely divided, and the external coat partially so; that is, it is completely divided in parts. A fair amount of clot exists on both sides of the ligature, and the ligature itself is intact.

Preparation 2, with drawing, represents a right common carotid artery, to which a ligature had been applied *twelve days* previously.

It was taken from a man, æt. 58, who was admitted into Guy's Hospital with a supposed aortic and innominate aneurysm, which was pressing upon the trachea and œsophagus, and giving rise to much nerve pain. The operation was performed on January 16, 1877, and a carbolized catgut ligature was employed. The operation was followed by marked relief to pain and other symptoms, but did not save life, the patient dying on the twelfth day from exhaustion.

Now in this case it will be seen that the whole artery at the seat of ligature was completely divided, and the ends separated. There was clot in the vessel above and below the seat of ligature, but it was not firmly adherent. The ligature itself had disappeared. In this case the *left* subclavian artery was found to be completely occluded from arteritis, and other interesting complications existed, which have no bearing, however, upon the question we are now considering, and need not, therefore, detain us.

Preparation 3, and drawing, represents the right subclavian artery, to which a catgut ligature was applied *thirteen days* before death.

It was taken from a man, æt. 36, for whom the operation was performed on February 18, 1877, for a ruptured traumatic axillary aneurysm, which was complicated with fracture of the great tuberosity of the humerus.

The man died on the 13th day from lung trouble, the parts about the wound having gone on towards repair in all ways satisfactorily.

At the post-mortem, as made by Dr. Goodhart, over the right clavicle was a linear wound healed in great measure, but leading at one or two places into a sinus-like cavity behind the clavicle. On opening this up a large amount of inflammatory material was found, apparently containing a quantity of bony material in a very early stage of

EXPLANATION OF THE PLATE.

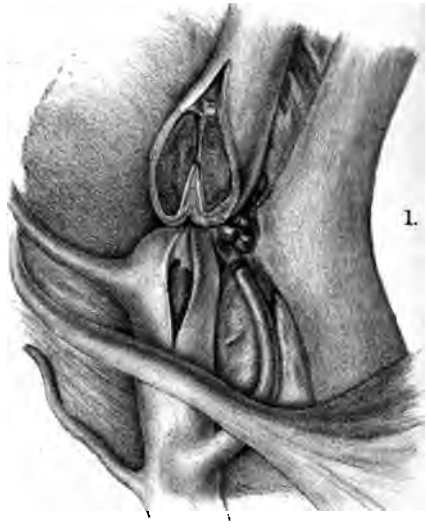
FIG. 1.—External iliac artery laid open after the application of a carbolized catgut ligature fourteen hours before death.

FIG. 2.—Right common carotid artery completely divided by a carbolized catgut ligature applied twelve days before death.

FIG. 3.—Right subclavian artery laid open after the application of a carbolized catgut ligature thirteen days before death. The inner coats have been divided and have united so as to occlude the vessel. The outer coat has likewise been divided by ulceration.

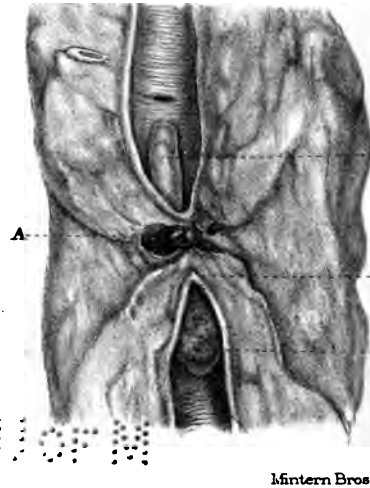
FIG. 4.—Common femoral artery after the application of a carbolized catgut ligature nineteen days before death; *a*, knot of ligature; *b*, clots; *c*, the divided coats of the vessel reunited.

2.



1.

3.



R. Mintern lith. Mintern Bros imp

Mr Bryant's preparations of Arteries tied by Carbolized catgut ligatures.

formation, so that it was hardly as yet even gritty. This material ran along in the course of the incision behind the clavicle. There was no suppuration whatever about the wound, all the parts looked perfectly healthy. With some difficulty the subclavian artery and vein were got out of this dense material, and found to be quite normal, except that the former was ligatured just beyond the scalenus anticus. The artery at this spot contained small but firm clots for half an inch above and half an inch below the seat of ligature. On making a vertical section of the vessel, after it had been hardened in spirit, these clots were well seen, and at the same time it became clear that the whole of the coats of the artery had been divided, and repaired. The knot of the ligature alone remained to testify to its presence.

Preparation 4, and drawing, represents the common femoral artery, to which a ligature had been applied *nineteen days* before death.

It was taken from a girl, æt. 23, who was admitted into Guy's Hospital with elephantiasis arabum of the right leg.

The operation was performed on March 27, 1877, and the patient died on the 19th day from gangrene of the limb.

The repair about the wound was good in all ways, very little suppuration having taken place.

The artery was not examined until it had been macerated and hardened.

On making a section of the vessel, all the coats appear to have been divided and to have repaired, and good clots existed above and below the seat of ligature. The knot of the ligature remained in a small hollow close to the vessel, and as it was attached to the artery there is reason to believe that some portion of the loop of the ligature still remains.

Now, it will have been seen, in all these four preparations, that the inner and middle coats of the ligatured vessels have been divided, and it is probable that this division took place as an immediate effect of the application of the ligature. It will also have been seen that the external coat has also been divided: in Case No. 1, within fourteen hours of the application of the ligature, and in parts only—and in the other three, at a later date, by what must have been an ulcerative process, for in Case 2 the whole vessel was completely divided and its ends separated; and in the other two more or less division of the external coat was to be made out. It is clear also that these results were due to the ligature. As a consequence the conclusion is inevitable:

That the catgut ligature, in its *primary* effects upon the ligatured vessel acts as any permanent ligature, and that the two inner coats of the constricted artery are divided by it as a direct result of its application.

But it does more, for, as shown by the preparations, it induces an ulcerative action in the external coat, more or less complete, as a secondary effect.

I will now turn, to my clinical experience, and see what evidence I can bring forward to support the conclusions to which the preparations I have brought before you have led me, and I have to report that I have ligatured with the catgut ligature ten other large arteries in continuity, viz :—

5 femoral,
4 external iliac, and
1 subclavian.

That in one of them the patient died on the tenth day, in two, there was secondary hæmorrhage, and in the other seven cases an uninterrupted recovery, and, I should add, with little or no suppuration. Indeed, in one case of ligature of the femoral artery, the wound healed by primary union without one drop of pus: the inconvenience of the operation-wound having been so slight that the patient only knew a cutting operation had been performed when he saw the healed scar of the wound on the seventh day, when the dressings were first cleared away.

I should add also that in none of these cases was the spray system followed. Rest to the part operated upon, moderate pressure over the seat of operation, and dry lint to the wound, were the means employed subsequent to the operation—water dressing with or without some medicated lotion being used when suppuration appeared.

In the single fatal case—that of a femoral artery—the man died on the 14th day from pyæmia and heart disease, and here after death the inner and middle coats of the artery were found to have been completely divided and the external coat ulcerated—the ligature, with the exception of the knot, having disappeared.

In the subclavian case some bleeding from the wound took place on the fourth day, but was arrested by pressure, and by the 23rd the wound had healed.

In one of the four cases of ligature of the external iliac artery the wound, which had almost healed, opened on the 29th day and bled; but pressure succeeded in arresting the bleeding, and all did well.

Now these three cases go to support the conclusions to which a careful examination of the four preparations I have exhibited has led me—for in the single fatal case the inner coats of the ligatured femoral with the external were found to have been completely divided on the 14th day, and in the two other cases mentioned, in which bleeding took place on the 4th and 29th day respectively, this could only have occurred from some ulceration of the vessel before its permanent occlusion had been completed.

I am, therefore, led to conclude: That the catgut ligature in its primary effects, acts upon the coats of an artery as any permanent ligature; and that as a secondary effect it may and does generally excite an ulcerative action in the external coat of the vessel, even to its complete division.

If, therefore, I cannot endorse what the distinguished introducer of the catgut ligature claimed for it in 1869—'That by applying a ligature of animal tissue antiseptically upon an artery, whether tightly or gently, we virtually surround it with a ring of living tissue and strengthen the vessel where we obstruct it'—I may express my belief that, as the loop of the catgut ligature dissolves within an uncertain period, and there is not of necessity any such sloughing or ulceration of the whole coats of the constricted artery as must ensue when a more permanent material is employed, we have in the carbolized catgut the best ligature at our disposal.

II. *A Case of Hysteria, with Contraction of the Lower Limbs, Anæsthesia, and Ischæmia, in a Boy.* By Henry Thompson, M.D. *Read October* 26, 1877.

André M——, a pale, oval-faced, feminine-looking boy, æt. 14, the son of a French father and an English mother, was admitted into the Middlesex Hospital, May 10, 1877, with the following history, as recorded in the notes. He has always been a delicate child, and far from strong; but never ailed anything definite up to the invasion of his present illness. Two months ago he began to fall away in flesh. Soon he became low-spirited, lost his appetite, and complained of vertical headache. In the evenings he has been liable to paroxysms of laughing and crying, accompanied by a hoarse barking cough, and by the sensation of a ball in the throat. Occasionally he has suffered from pain in the knees,

from palpitation and precordial distress, and from slight diarrhœa, but never from vomiting. For the last month he has been wholly unable to walk, owing to paresis, rigidity, and distortion of the lower extremities.

On admission.—Urine of specific gravity 1·030, acid; contains no albumen and no sugar. The pulse, respiration, and temperature presented nothing peculiar; they were nearly normal now, and throughout the whole career of the case. Voice almost inaudible, but much strengthened by a weak faradic current. Slight dulness, with somewhat bronchial breathing over the left infra-spinous fossa. The legs are firmly flexed upon the thighs, and the feet extended upon the legs in the position of talipes equinus. The genital organs are badly developed for his age. The right testicle is found to be high up in the inguinal canal, but it can be pushed down into the scrotum: the left testicle is contained within the scrotum, and is about the size of a small horse-bean. Anæsthesia and ischæmia were prominent symptoms from first to last, but it is unnecessary to dwell upon them here; they will be fully described in the sequel.

May 18.—In the afternoon the patient was seen by Dr. Sidney Coupland and Dr. Thomas Barlow, who have left the following record of their examination:—'The lad was reclining in a chair perfectly impassive and quiet. He answered questions slowly, in a feeble tone of voice, scarcely above a whisper. His appearance was most inanimate, his arms lying by his side, and his features being almost devoid of expression. The pupils were large, equal, and sluggish. No satisfactory results were obtained from attempts to test the range of his field of vision. His hearing seemed to be naturally acute. The cutaneous and deep anæsthesia before noted was now amply confirmed. He never winced in the least to severe pinches on the cheeks, forearms, and legs, from the knees downwards to the ankles. In every case the pinch produced a dead-white areola, which slowly faded. The hands were cold to the touch, nor did he feel the prick of an ordinary pin, although several deep punctures were made on either aspect of each forearm, sometimes down to the bone, at others far into the mass of the fleshy substance. On no occasion was there the least evidence of sensation, and in answer to direct questions the boy said he felt nothing. It was further noticed that the punctured wounds remained white, and did not bleed. Faradism was then applied to the right forearm, the current being gradually increased in

intensity, and although most powerful muscular contractions were obtained, there was no sign of any painful sensation. After the current had been passing for awhile the seats of some of the previous punctures began to bleed, and punctures now made produced bleeding, but the anæsthesia persisted. Whilst the right forearm was being faradised, it was suggested by Dr. Barlow that some gold coins should be placed upon the left forearm. Two sovereigns were placed there in the first instance just above the wrist, the lad being instructed to watch them carefully. After they had been there some few minutes without any change in the anæsthesia, another sovereign was added, this being moistened with water, and shortly afterwards a fourth. At the same time the boy was told to place his fingers on the row of sovereigns, and press them against his arm. In the course of about ten minutes the coins were removed, and it was now found that if the forearm were lightly pinched on the extensor surface the boy withdrew it as if in pain. He never responded to pinches on the flexor surface or on the opposite forearm, and the nearer the approach to the exact areas that had been occupied by the coins, the more acute appeared to be the painful impression. The pinches were almost immediately followed by a pink flush, contrasting with the dead-white pallor produced by the same means in other parts of the limb. There was the same return of sensation to pricking, and here again there could be no question that the sensibility was more acute along the centre of the extensor aspect of the forearm. Moreover, these shallow punctures were followed by free bleeding, while elsewhere the deepest punctures remained bloodless.'

19, 11 A.M.—The boy walked up and down the ward with the assistance of two nurses. He distinctly feels pinches on the back of the left forearm, but nowhere else in the upper limbs.

21.—In the afternoon he fell into a violent fit, sobbed and gasped for breath, seemed unconscious of everybody and everything around him, and finally, after about ten minutes, burst into tears and recovered. The fits are said to occur on alternate days.

29.—Great improvement in the sensibility of the face. The conjunctivæ, which were once unimpressible, now react readily to the touch. The extensors of the feet are beginning to relax their rigidity, the talipes equinus is disappearing, and voluntary power over the movements of the toes is returning.

June 2.—Strength improving. The forehead and head appear to be insensible to ordinary stimuli. The cheeks, however, and the lower parts of the face show greater sensibility. The upper arms, the trunk, and the feet are normally sensitive. When the boy's eyes were shut, and pepper was placed on the tongue, he said there was nothing there, but immediately afterwards detected the taste of common salt.

5.—This morning Mr. E. A. Fardon, the physician's assistant, submitted the lower limbs to examination with the gold test, after duly ascertaining that from the knees down to the ankles they were insensible and bloodless on puncture, however deep the wound might be. The following were the results. It mattered not whether the moistened sovereign was pressed upon the skin by the boy himself or by the experimenter. It mattered not whether the boy was conscious of the presence of the coin or to all appearance unconscious: the result was always the same—sensibility and bleeding in the punctured part. Again, mere pressure with the moistened finger without the interposition of the coin, whether made by the boy himself or by Mr. Fardon, gave no reaction. Ice produced the sensation of slight cold: a hot spoon appeared to be absolutely unfelt. Above the knees there is a decided increase in the degree of sensibility. The legs and feet respond, but not violently, to a strong faradic current.

7.—Mr. Fardon pursued his examination of the lower limbs after determining the pre-existence of analgesia and ischæmia as before. No difference was ever discovered between the two legs in any case. Sometimes the boy's attention was concentrated upon the experiment, at others it was drawn away from the proceedings, which were often conducted out of sight and underneath the bed-clothes. In some cases, the several substances were carefully wrapped in paper, the wrappers being at times visible to the boy, at times invisible. In no instance could any difference be made out in the result, neither did it appear to be of any moment whether the boy himself held the objects on the skin, or whether they were pressed upon by another; nor, again, whether they were moist or dry on application. The experiments with the gold coins on the whole corroborated the evidence of former trials. Similar experiments were essayed with silver, bronze, and wood severally, but without success: no sensation accompanied the puncture, not a drop of blood flowed from the wound. Sometimes, but most exceptionally, the gold

coin failed to act, or acted imperfectly; the remaining substances never acted at all.

8.—Half-an-hour after midnight, when the boy was asleep, a pin was pushed through the bed-clothes beneath the skin over the tibia. The boy started, withdrew his leg with an expression of pain, and seemed disposed to cry. The blood issued freely from the wound.

For some days from this date he suffered first from bronchitis, with marked exaggeration of his brassy cough, and then from a rather diffuse but not intense attack of rheumatism. After a brief interval of returning health he was seized with diarrhœa, which, though severe, made no great impression upon him. He soon gained strength, his voice improved in power, and he walked about with comparative ease.

July 4.—This morning, as he was engaged in the composition of a poem wherein his whole mind seemed to be absorbed, the opportunity was taken to plunge a pin into his leg. He never appeared to feel it in the least, nor was there any bleeding from the wound.

10.—Again he suffered from bronchitis—this time more severely than before, and for a longer period.

27.—Mr. Fardon renewed his experiments, with the assistance of Mr. Laybourne. It was first ascertained that the lower limbs from the knees down to the ankles were insensible and anæmic to deep punctures. The thighs, however, and the feet retained their normal sensibility and capacity of bleeding. Again, as before, concealment of the coin made no difference in the result. Again, exceptionally, the gold failed, but almost invariably succeeded in provoking pain and hæmorrhage. On one occasion a gold ring was used: it was then found that the reaction was limited to the zone of pressure, and that no change occurred within the circle. Once the boy pressed a sovereign on the skin in the belief that it was a shilling. No reaction ensued. Afterwards, when the same coin was given to him, and he was shown that it was a sovereign, he placed it upon a distant part; the usual result followed its application.

Hitherto silver and copper coins had proved to be inoperative. The experiments had been mainly conducted upon the right leg, and now it was noticed that sensibility and bleeding were apparent where a shilling had been placed; but, on further investigation, it was discovered that the whole leg, as before defined, had become more or less sensitive, especially but not exclusively over and around the parts experimented upon. Attention was now transferred to the

left leg, which remained obstinately insensible, and coins were applied—gold, silver, and copper—carefully wrapped in paper; so carefully indeed that the experimenters themselves were unable to name the coins enclosed in the several wrappers. Moreover, the envelopes were often concealed from the boy's view. If then he could form any idea of their respective contents he must have been more than clairvoyant. The sensibility and the bleeding that followed the puncture were entirely confined to the part pressed upon by the gold coin.

August 4.—After the usual preliminary test, the lower limbs were submitted to a final examination with the coins. All the subjoined experiments, with the unavoidable exception of the first two, were conducted both openly in view of the patient and secretly under the bed-clothes, without any difference in the result. In every case the coins were allowed to remain *in situ* for ten minutes. All the experiments were repeated, and in every instance but one the issue was the same.

A shilling was pressed upon the skin, the boy being told it was a sovereign. No reaction took place. A sovereign was laid on in the same manner, the boy being told it was a shilling. Sensation and bleeding followed. Gold, silver, and copper coins were applied in various ways, in sight and out of sight, moist and dry, covered and uncovered, wrapped in paper beneath an envelope of silk, and wrapped in silk alone. The spaces corresponding to the gold bled everywhere, with all the signs of sensibility present, and without a single miscarriage. The silver spaces remained insensible and bloodless with one exception. At the close of a protracted manipulation, embracing a large proportion of the limb, the part compressed by a shilling proved to be sensitive, and bled. The copper coins were inert from beginning to end.

14.—There is dulness on percussion with bronchial breathing over both upper lobes posteriorly, and in the left front impaired resonance, with deficient expansion and blowing respiration.

14 to 24.—Throughout the whole of this period sensibility and capacity of bleeding were shown by numerous experiments to be normal everywhere.

25.—Left the Hospital for the Convalescent Asylum at Eastbourne. Came back to show himself in the spring of 1878, when he was perfectly well.

The foregoing is a case of hysteria, pure and simple in the best sense of the term. The boy is thoroughly truthful, straightforward, and uncomplaining. How then came he to be hysterical? Many things point in this direction. He is a precocious boy; he is a poet of no mean order for his age; he is singularly well-bred, gentle in manner and speech, far beyond the mark of his condition in life. All these items deserve to be taken into the reckoning: they evince a fineness of organisation, bordering closely on the hysterical frame of mind. Again, he has lived under the dominion of an over fond mother, who has done her best, or her worst, to spoil him. Finally, his sexual organs are ill-developed. Probably this is the main element in the predisposition. As for the phenomena of the case, the following are the most salient features:—

(1.) We have paresis with rigidity of the limbs—contracture, as the French call it. Paresis in hysteria is common enough, and contracture as a passing symptom by no means uncommon. In the permanent form, it is exceedingly rare. Charcot and Briquet, in all their enormous experience, record only fourteen cases. In our case the contracture has disappeared, but there is still a trace of the paresis remaining.

(2.) We have anæsthesia amounting to analgesia. As a rule in hysteria, loss of sensibility, when widely diffused, takes the form of hemianæsthesia, but in this respect our boy is a law unto himself; in him the distribution of the insensibility was unique and even grotesque, setting at defiance all precedent and all anatomy. Stranger by far is the third feature, the ischæmia, or stoppage of the blood-flow. Strangest of all is the last, the influence of the gold coins. What is the meaning of this influence? Abroad, at any rate in France, electrical, electro-chemical, or electro-physical theories appear to be in the ascendant. On the other hand, morally regarded, metals, at least polished metals, are attractive things, and in virtue of this property, when laid on the living surface, they may engage the imagination and hold fast the attention, thus recalling the lost warmth, circulation, and sensibility to the cold, bloodless, and insensible regions of the body. Unfortunately for this view different metals are necessary in order to act upon different individuals. Now we have a fair idea of the laws of attraction in metals, so far as they severally sway the bent and bias of unhysterical mankind. Gold, for example, in ordinary life, is far more fascinating than copper. Why then should the charm

of gold ever yield to the charm of copper, as apparently it *may* do in hysteria? Is this idiosyncrasy, or is it one of the many caprices and contradictions of the great neurosis? Again we are all abroad, and the solution of the mystery seems to be as far off as ever. The moral theory finds favour with Dr. Russell Reynolds. One of our experiments may be adduced in support of this view. Once when the boy believed the sovereign to be a shilling, no reaction ensued. It must be borne in mind, however, that the sovereign, when known to be gold, sometimes failed, though very seldom. Moreover, the experiment, when tried a second time with every precaution to exclude error, gave the opposite—the usual result. Other experiments, many times repeated with the same unvarying issue, tell uniformly against the moral hypothesis. If there is no lurking fallacy here, if the boy really had no consciousness, and no suspicion of the presence, the pressure, and the nature of the coins, when carefully concealed from his view—above all, if in his last and best examination with the coins he fully believed the shilling to be a sovereign and the sovereign to be a shilling, when he was falsely told so—the moral theory cannot be maintained to the exclusion of all others. Imagination may go a long way in many cases, but clearly imagination is not all in all in every case and on all occasions. Probably it had nothing whatever to do with our own case *as far as the coins are concerned.* Again, Dr. Reynolds ascribes the insensibility itself, and apparently also the ischæmia, to mental and moral agencies. He even ventures to ask whether the anæsthesia may not exist only at the time of observation. The experiment that we performed when the boy was asleep speaks strongly in confirmation of this idea. He felt the puncture most keenly, and the blood flowed freely when he was taken by surprise, and when there were no impressive surroundings, no old associations to call forth the phenomena. Possibly here Dr. Reynolds has hit the nail upon the head. The experiment, however, was only once tried: it was thought unwarrantable to repeat it.

As for the few failures of the gold, and the still fewer successes of the silver, in all likelihood they were mere accidents in the main. When the gold failed, the time of application was guessed only: it never failed when the time was duly prolonged and accurately measured at ten minutes. Again the silver never succeeded, save when at the close of a long series of experiments the entire limb from knee to ankle had become more or less charged, if not everywhere saturated,

with the gold. Nevertheless, if we may judge by comparison with the copper coins, which never acted at all under any circumstances, it is possible, but by no means certain, that the silver may have exercised some slight auxiliary power, just so much as to reinforce the gold and to consummate the result, over areas insufficiently excited by that metal, but not so much as to determine the result by its own unaided operation.

Whatever the *modus agendi* may be, the average duration of the forces in play is perhaps undetermined as yet, but it seems to be long enough to give fair promise of utility in practice. Coins and metallic bands or plates have been employed remedially in France on a large scale. In our case they have been put to no practical use. Faradism alone has been applied along with the administration of shower-baths, valerian, cod-liver oil, and iron.

III.—*A Case of Hysterical Anæsthesia of both legs below the knee. Treatment by Metallic Bands: Cure.* By W. H. Broadbent, M.D. *Read October* 26, 1877.

(Notes by Mr. Bridges.)

SARAH G., housemaid, æt. 17, was admitted into St. Mary's Hospital, July 2, with impairment of muscular power in both upper extremities, and anæsthesia of both legs and feet.

Catamenia commenced two years ago. Until this time her health had been very good. Since this, she has suffered much at her periods from headache, pain in back and in left side; sometimes also in right. Menstruation has been regular every three weeks, lasting about three days, and normal as to quantity. During last four months, pain has been persistent in forehead, lower part of back, and left side of abdomen. She has been obliged to give up her occupation, being very weak, and fainting after exertion. Loss of muscular power and sensation have come on gradually. Has never had hysteria.

Present Condition.—Considerable loss of muscular power in both arms and hands. No loss of sensation. In both legs, from knees downwards, there is total loss of sensation. No evident loss of muscular power. Above knees sensation is not impaired. She can raise both arms nearly

up to head, but can scarcely squeeze at all with hands. She can get out of bed and walk about; and also stand still with feet close together and eyes shut; yet there is no sensibility in feet or legs. When either leg is pricked with a needle, patient's eyes being shut, she does not know what is done. Needle is even thrust down under either great toe-nail, but not the slightest indication of pain is given. Patient says that if she could not see she should not know that she had legs and feet. In all other parts of body sensibility is normal. Both legs and feet are very cold; when pricked no blood is noticed to exude. Whole body is well nourished, and has not an anæmic appearance. Pain is felt on pressure being made in either ovarian region, but most in left. Senses of smell and taste normal. Sight varies; sometimes can see well, at others two or three things are seen when she is looking only at one. Nothing abnormal noticed about optic discs. Other organs normal. Temperature normal in axilla.

Treatment.—Ordered pil. galbani co. gr. x. bis in die. General health somewhat improved, but no other change took place.

July 11.—Metallic band ordered to be placed round right leg.

On the 12th patient said there was a slight feeling of weight in right leg; but she could not feel the band round it, nor did she feel when pricked.

13.—She thought she could feel there was a something round leg, but there was not decided return of sensibility.

15.—When leg was sharply pinched, patient said she could feel it. When her eyes were shut, and this leg was pricked anywhere she could mention place where it was done. There was no feeling of weight in the leg, but some tingling when walked upon.

17.—Patient could feel as well as ever in this leg and foot, but the other remained as devoid of sensibility as before. This was proved by pricking and thrusting needle again under toe-nail, when no pain whatever was evinced. Band was still kept on for some days, then transferred to left leg, in which sensibility returned in much the same way as in other leg, but more quickly. Muscular power improved in both arms. She gradually lost headache and other pains. Was discharged August 2, with full sensibility in each leg and foot, fair muscular power in both upper extremities, and in good general health.

Remarks by Dr. Broadbent.

The treatment adopted in this case was, of course, suggested by the results of the application of plates of gold and other metals in hysterical hemianæsthesia, as described by Professor Charcot. His experiments, which were made the subject of a report to the Academy of Medicine, were undertaken at the instance of M. Burck, for the purpose of testing his views as to the therapeutic influence of gold in certain affections of the nervous system. The patients, hysterical girls or women, had pain or tenderness in one or other ovary, more commonly the left, and the corresponding half of the body had completely lost sensation. A large pin could be thrust through the skin at any part of the trunk or limbs without being felt, and without the patient knowing that anything had been done, while no blood issued from the punctures unless a vein had been pierced. A band, in which plates of gold were secured was now placed round the arm, the gold in contact with the skin, and in 15 or 20 minutes sensation had returned, and the punctures bled; the return of sensation taking place first near the band and gradually spreading upwards and downwards from this part. According to the experience of the Salpêtrière, it was not a matter of indifference what metal was employed. Gold was most generally efficacious, but in a few cases it failed, and some other metal had the power of inducing a return of sensation. It was found that a feeble galvanic current was set up by the contact of the metal with the skin, and it has been suggested that this was the curative influence.

I may here mention a fact which struck me as very remarkable when a number of these cases were shown to me by Professor Charcot, during a recent visit to the Salpêtrière, viz., that the subjects of this hemianæsthesia were some of them engaged in sewing, and appeared to have no difficulty in holding the work or even the needle. It did not occur to me at the moment to suggest the application of a test I often employ, which is to ask the patient to pick up a pin from a smooth table blindfold, but apparently the women were not under the necessity of keeping their eyes on the work, or on the objects held in the hands.

In the case narrated no care was taken in the selection of the metal, and brass was employed. It is clear that the band was in some way or other instrumental in the recovery of sensation, and that it was not due simply to rest, food,

the moral influence of residence in the Hospital, and change of surroundings, since feeling returned only in the leg on which the metal was worn. It is probable that as brass is more oxidisable than gold there would be more powerful galvanic currents, but no test was applied, and I attribute the improvement in this case simply to expectant attention. The girl looked for the result, her attention was constantly called to the part by the presence of the band, and this was sufficient to produce the effect. I was careful not to express any confident anticipation of a cure to the patient, or to the students or nurses in her hearing, though this artifice would have been justifiable, and would probably have had considerable influence, as I wished to make the experiment without resort to such measures.

The absence of hæmorrhage from punctures is a remarkable feature in these cases. I am disposed to attribute the anæsthesia to the condition of the capillary circulation indicated by this, rather than directly to changes in the nerve-centres.

IV.—*A Case of Injury to the lower part of the Spinal Cord, followed by Wasting and Contraction of the Muscles of the Lower Extremities.* By JOHN AIKMAN, M.D. *Read October* 26, 1877. *Communicated by* GEORGE LAWSON.

JOSEPH BARGERY, æt. 21, was admitted to the St. Peter's Port Hospital, Guernsey, on March 30, 1877.

Shortly before admission he had fallen from a tree in which he was sitting, at a distance of 12 feet from the ground.

He cannot tell how he alighted, but the bystanders say that he struck his heels on a form-seat and fell flat on his back on the turf.

He was pale and evidently much shaken by the fall, but had no marks of bruising. He complained of loss of power in his legs, but retracted them when pinched or pricked.

For some days he complained at night of great pain in the legs, and disturbed the whole ward by his cries. During the day he was free from pain, but still professed inability to move his legs. He could not give any definite description of the seat or nature of the pains, only saying that they were fearful, and more in the back than in the front of the legs.

No spasm of the muscles was noted, and patient could not say whether his legs were cramped. They were never drawn up, but always extended and rigid.

Half-dram doses of laudanum had no effect in allaying the pain, and 30-grain doses of chloral did not produce sleep. His bladder acted well, and the bowels readily to medicine.

There was never any vomiting.

The interrupted current produced contraction of the muscles, and gave rise to great pain.

After the first week he was able to move about the ward with the aid of a stick, but still complained of nocturnal pains. On April 18 he was dismissed at his own request. He was seen on May 25, and although he could not walk comfortably was able to wear a boot.

On July 4 he stated that, three weeks previously, he began to have cramps in the left foot, and could not get his boot on. His left foot, on inspection, was found to be very much atrophied with the flexor muscles in extreme tonic spasm. The sural muscles were also in spasm, and but for the flexion of the toes the foot resembled the position of talipes equinus.

The calf and thigh had undergone atrophy, and to a lesser extent the muscles of the other leg. The nocturnal pains had disappeared. There was slight tenderness to pressure over the spinous processes of the lumbar vertebræ.

The patient was put under chloroform to the surgical degree, but the spasm scarcely relaxed. A blister was applied by the side of the spine, but without effect. Belladonna ointment proved equally useless, and a gentle mercurialisation gave no better result. The interrupted current, to which during his previous residence the muscles had acted well, failed to excite any contraction of the muscles in the front of the leg, and produced no pain although a high power was used. The warm bath was equally inefficacious, although combined with full doses of opium.

The continuous use of the galvanic brush seemed to improve the circulation in the foot and to increase its heat, but beyond this had no effect.

The atrophy is still progressing, but there is no evidence of the involution of any other muscles.

V.—*A Case of Cerebro-Spinal Lateral Sclerosis.*—By Thomas Stretch Dowse, M.D. *Read October* 26, 1877.

THE following case, whilst under my care, presented some points of interest which induced me to bring it before your notice this evening. In reference to the invasion and progress of the disease up to a certain period I regret to say that I am almost entirely ignorant. This is a misfortune of considerable importance, as otherwise its precise clinical features, as well as the pathological changes, have been noted with some care.

Selina H., aged 41, was admitted into the Central London Sick Asylum at Highgate, on January 12, 1872, and died on September 23, 1876, so that she was under my observation for more than four years. It appeared that her husband was a drunkard, and that he treated her unkindly upon several occasions, and it was after an attack of this kind, which frightened her very much, that she was seized with paralysis of the left side of the body. This was in 1870. In the year 1872 the right side of the body also became paralyzed, so that when I saw her in this year her condition was very much as follows:—It will be seen by the photograph that I now pass round, which exactly represents the state in which she was almost constantly to be found, that there was a complete paralysis of voluntary power of every muscle of the body, and as the nurse placed her at night, so she was to be seen in precisely the same position in the morning, for I was really to a certain extent doubtful in my own mind as to whether there was or not any voluntary or even automatic muscular movement; but after repeated observations, month after month, and year after year, no movement of a voluntary nature could be detected, excepting upon one occasion, when she answered some few questions clearly and intelligibly, which showed that her reasoning power was good. In whatever position the limbs were placed so they remained. Both halves of the body were similarly affected. There was complete anæsthesia of the entire body, with flexed contractions of the extremities, which were in a constant state of tremulation, and never ceased to be so affected unless she was asleep. I don't know that the word tremulation is exactly applicable for the movements, especially of the upper limbs: they were rather, perhaps, a modification of those

one sees, as far as rhythm is concerned, in paralysis agitans. The skin was soft and perspirable. There were apparently no trophic changes, and there was no appearance of a bed sore until within a month of her death. There was no marked adipose or muscular wasting, and the muscles contracted readily to the stimulation of Stöhrer's galvanic continuous current. She never exercised any voluntary control over the sphincters. The countenance was mask-like, and always devoid of expression. When she was spoken to about her home the tears would flow freely down the cheeks, but no sign of emotion was ever beyond this visible. When agitated the tremor of the limbs usually increased, and when asked to perform any act it was clearly seen that an attempt was made to carry it out, but the will was unequal and powerless to execute. I will now take the cranial spinal nerves successively, but it is a very difficult task to say how far the special senses were involved. 1st. The application of strong ammonia to the nostrils caused at first what I considered to be a voluntary movement of the head, but repeated applications did not produce a similar effect. 2nd. The sense of sight seemed good, and the ophthalmoscope gave no evidence of retinal changes. 3rd. Both pupils were usually contracted, but more so the right. 5th. There was marked trismus, and no ordinary power could depress the lower jaw, yet, when food was brought to her the rigidity became in a measure relaxed, although there was no direct masticatory power. 7th. There was evidently marked paralysis of the facial muscles from centric causation, but I believe the sense of hearing was normal. When semi-solid food was given it was necessary to place it well into the mouth over the tongue, otherwise it would return, showing clearly that she possessed no voluntary power over the labial muscles. 8th. Sensation of the tongue and the special sense of taste were in like manner obliterated as far as one could judge. The respiratory movements were regular, but extremely limited, for both the chest and abdominal walls were scarcely even seen to move. The heart's action was regular and normal. 9th. The voluntary power over the tongue appeared to be greater than that over any other member, for she would at times get it to the lower row of teeth, but it was never protruded.

These, then, are what might be noted as the objective signs presented by this patient, and so in a manner she vegetated until she died. What her sufferings might have been it is impossible to say, for she had no voluntary power whatever

to make these conditions manifest, even if they had an existence.

The contraction of the limbs ceased immediately after death, and at the post-mortem examination, which was made fourteen hours after, there was no cadaveric rigidity.

The brain weighed 40 oz. The dura mater was normal in appearance. The arachnoid was slightly opaque, and the pia mater gave evidence of some sanguineous colloidal extravasation over the upper surface. The general surface of the convolutions of the hemispheres was apparently free from any degenerative change. The cerebral substance of the centrum ovale was tough, shining, serous, and anæmic. There was an excess of fluid in the ventricles. The motor ganglia on the left side were free from any gross lesion, but on the right side a brownish-looking degenerative change was seen to extend from the internal capsule of the corpus striatum, coming along the under surface of the optic thalamus, through the right crus cerebri into the under and inner part of the right half of the pons varolii, involving the right floor of the fourth ventricle. The pons varolii and medulla oblongata were examined for me microscopically by my friend, Mr. Kesteven, and I am indebted to him for the following account:

The vessels were thickened and irregularly dilated. The nerve-cells presented the various phases of degeneration from the fusions and discoloration due to the commencing deposits of black pigment granules. In the medulla oblongata, about the middle of the olivary bodies, were a few spots of grey degeneration, which consisted in the disappearance of the neuroglia as well as of the axis cylinders and nerve-fibres. It is in the pons varolii and medulla that the morbid processes seem to have reached their acutest form. At certain points the tissue is completely broken down, but the right half of the pons is evidently the focus from which the sclerosis had spread upwards to the corpus striatum, and downwards to the left lateral column of the cord. The downward progress was seen to extend from the pons through the anterior pyramid, and so to invade the lateral columns. There was nothing abnormal to note in the thoracic or abdominal viscera.

There are several points in this case of unusual interest. In the first place it is evident that the attack commenced by some small aneurysmal hæmorrhages in the right half of the pons varolii, which gave rise to a spreading degenerative scle-

EXPLANATION OF THE PLATE.

FIG. 1.—Section through the middle of the pons varolii, showing the disease at its most acute point. It affects the right side chiefly, but causes some sclerosis of the left. *a*, arciform fibres; *b*, central raphè; *c*, floor of fourth ventricle; *d*, longitudinal bands of white fibres; *e*, nuclei of fifth and sixth nerves.

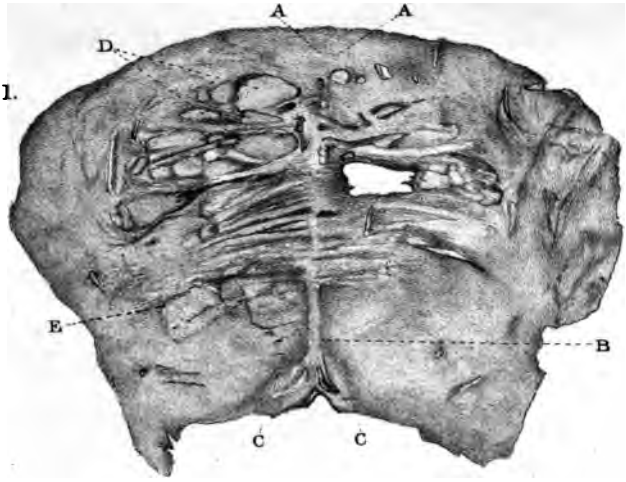
FIG. 2.—Section of the cervical portion of the cord, showing sclerosis of the left lateral column with slight atrophy of the whole of the left side.

FIG. 3.—Section of the dorsal portion of the cord, showing similar changes.

FIG. 4.—Section of the lumbar portion of the cord, showing sclerosis of the left lateral columns.

From sections made by W. H. KESTEVEN, ESQ.

1.



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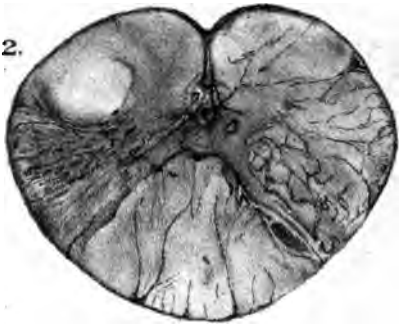

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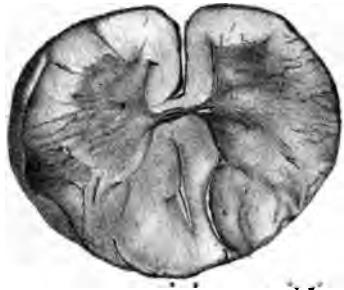


F J Blight ad nat. del. R. Mintern lith. Mintern Bros imp.

Dr Dowse's case of Cerebro-Spinal lateral sclerosis.

rosis in direct continuity with the histological course of the fibres ascending to the internal capsule of the corpus striatum on the same side, and descending in the course of the decussating fibres in the anterior pyramids of the medulla oblongata to the lateral column of the spinal cord of the opposite side. In the drawings which have been sent round this is very apparent, and is very well demonstrated. For instance, drawing No. 1 (Plate II., Fig. 1), which gives a section through the pons varolii, shows the disease at its most acute part affecting the right side chiefly, and also some sclerosis of the left side. In drawing No. 2, through the lower half of the pons, the sclerosis is still seen on the right side in the longitudinal bands going to form the anterior pyramids. In drawing No. 3 the sclerosis is shown invading the commencing anterior pyramids on the right side. In drawing No. 4, showing a section through the medulla, the right anterior pyramid is seen to be sclerosed. In drawing No. 5 the sclerosis is seen to be invading the commencing decussating fibres on the right side. In drawing No. 6 the sclerosis of the right anterior pyramid is seen passing with the decussating fibres, and invading the left lateral column of the spinal cord. In drawings 7 and 8 (Plate II., Figs. 2 and 3), through the cervical and dorsal portions of the cord, the sclerosis is seen to have left the right half of the cord and to have confined itself almost exclusively to the left lateral column. In drawing No. 9 (Plate II., Fig. 4), through the lumbar cord, the sclerosis is still seen invading the left lateral column. I believe it is now a recognised pathological fact, which has been demonstrated more particularly by M. Charcot, that the case now before your notice is not an exception to the general rule, namely, that lesions of the brain, when they succeed in promoting consecutive degenerative changes, do so in complete harmony with what may be termed a direct histo-pathological law. In the second place it is well to note and ask the question, 'What was this woman's psychic state?' For nearly six years she remained in the condition which I have just described, to all outward appearances a perfect automaton, never showing fits either of excitement or depression. My opinion was this, that her mind was not involved, that reasoning power did exist, that the ideo-motor centres were acting normally, but that there was an absence of co-ordinating power between them and the basic-motor ganglia, so that the power to act was lost, but not the sense to will, for as far as we could judge

she tried her utmost to perform certain acts when asked to do so, and this was made more evident to my mind by the increased agitation of the limbs under these circumstances.

It is interesting to follow out M. Charcot's statements concerning the association which exists between sclerosis of the lateral columns of the spinal cord and hysteria, both with and without tremor, and had it not been for the marked facial paralysis in this case I should certainly have been inclined to have looked upon it as of an hysterical character, the more especially as there was such general and profound anæsthesia; and again, M. Charcot quotes several cases, a similar one to which has fallen under my own observation, where this especial flexed condition of the limbs of some years' standing with tremor have suddenly yielded to a strong mental emotion. Yet in these cases it was evident that no sclerosis of the lateral columns of the cord could have existed, although such a condition might have been anticipated.

It is not many years ago when the contractured condition of the limbs of a hemiplegia arising from hæmorrhage, was said to be due to the influence produced upon the conducting fibres by a contraction of parts in contiguity with the seat of lesion; but in my own experience I have usually found a direct molecular change to have taken place in the course of the motor fibres leading from the brain to the lateral columns of the cord, and to which it seems highly probable that this condition is due. Yet, on the other hand, as we know for a certainty that spreading degenerative changes of long-standing do take the histological course of the conducting-nerve elements, we cannot altogether set aside the former theory, especially if such lesions originate in the grey matter of the motor convolutional area.

VI.—*A Case of unusually large Calculi removed by External Incision from a Sac communicating with the Penile Urethra.* By EDWARD BELLAMY, F.R.C.S. *Read November* 9, 1877.

THE calculi shown were removed from the penile urethra, in front of the scrotum, of a man about 40 years of age. It appears that when a lad of 11 two small ones were taken from the same place. The present mass seems to have been about 11 years forming, and had steadily increased in size, until it caused a tumour, about as large as a pigeon's egg, just in front of the peni-scrotal fold. He had never passed any

gravel, and no stone could be detected in the bladder or urethra by a sound. A straight longitudinal incision through the penile integument and urethra released the calculi from their bed. A very small probe could be introduced through an aperture in the urethral aspect of the sac, and withdrawn through the meatus. The patient had no bad symptom after the operation. The sac was kept well syringed out with a zinc lotion, and healed completely at the end of a week, leaving no urethral fistula.

The calculi, when first removed, weighed exactly 1 oz., and measured, when placed together, 1·7 in. in length, 1·2 in. in breadth, and 1·5 in. in depth. The two stones were curiously facetted together, and their opposed surfaces highly polished. The mass was irregularly mammillated, and exhibited in section successive layers of phosphatic deposit. I could not detect a nucleus in the portion sectioned; perhaps it had been pushed out in sawing it.

The specimen is not only remarkable for its size and position, and from the fact that it caused the patient no inconvenience except being, as he expressed it, 'rather in his way,' but that no urethral fistula remained after the operation.

It is not quite evident how multiple calculi with facetted surfaces form in the urethra or its walls. It may be a result of spontaneous fragmentation, as perhaps in some instances is the case, or it may be a result of the mode of development of the calculus. In this instance, I presume, the two calculi were formed separately, and were originally in contact, and every current of urine deposited a layer of calcareous matter on the external surfaces of each of them, and not upon those actually in contact, and the reason why they had not become soldered together is doubtless owing to the reciprocal movements to which they were subjected during the intervals of micturition, and the contractility of the urethral and scrotal tissues, thus rendering them independent of each other. The highly polished surfaces are obviously due to friction.

The specimen is in the museum of the College of Surgeons.

VII.—*A Case of large Urethral Calculus.* By SYDNEY JONES. *Read November* 9, 1877.

THIS was a specimen removed from a man, æt. 60, by Mr. Sydney Jones. He had been sent into St. Thomas's

Hospital for difficulty of micturition, and was supposed to have stricture; but on passing an instrument this impinged upon a calculus lodged just behind the bulbous part of the urethra. It might be felt in the perineum; and the forefinger being placed in the rectum and the thumb on the perineum, the foreign body could be moved to and fro, and made to grate on a metallic instrument in the urethra. A catheter might be passed over the calculus into the bladder. The calculus was about the size of a small chestnut. Each time a catheter was passed there was a rigor, the temperature rising considerably, once to 106·3°, and falling again to normal on the subsequent day.

On October 3 Mr. Sydney Jones cut down upon the calculus in the perineum, and easily removed it. The wound was closed by two deep and two superficial sutures; and No. 8 catheter, with drainage tube attached, was passed into the bladder. At 7 p.m. there was a rigor, and the temperature rose to 104°. On the next day the temperature was normal, and remained so. Two sutures were removed three days after the operation, and the remaining two on the fifth day. The catheter was removed six days after the operation.

On October 10 and 11, he passed urine in a good stream without difficulty or pain; none escaped by the wound, which was not quite healed towards the front part. Except on one doubtful occasion referred to by the patient, viz., on October 15, no urine passed by the wound after the operation. He was allowed to get up a fortnight after removal of the calculus, and left the Hospital quite well a few days afterwards. Mr. C. Stewart reported that 'the calculus weighs 135 grains; it consists of a small nucleus of oxalate of lime, which had evidently been broken when in the bladder; around the nucleus is a thick deposit of fusible calculus, with an excess of triple phosphate, interspersed with some thin dark layers containing oxalate of lime.'

VIII.—*A Case of Unilateral Gunshot Injury to the Spinal Cord.* By W. R. Gowers, M.D. *Read November 9, 1877.*

THE following case of injury to the spinal cord was under surgical care in University College Hospital. On account of the interesting interference of the function of the cord, Mr. Heath kindly placed the case at my disposal for investigation.

A Parsee student, in good general health, at 1 a.m. on the morning of October 10, 1876, fired a small revolver into his mouth. When seen soon afterwards by Dr. Charles Read, of St. George's Square, he was conscious, but collapsed, and unable to move his right arm or leg. There was no mark of external violence, but his tongue was blackened, swollen, and slightly lacerated. A small aperture was felt in the spinal column at the back of the pharynx. There was no injury to the soft palate. Liquids could be swallowed with facility, but articulation was difficult. He was seen soon afterwards by Mr. Christopher Heath, under whose care he was admitted into University College Hospital a few hours later.

The surface had then (at 10 a.m.) become warm. His pulse was 100, his respiration 40. He kept his head in one position, but could move it freely. There was no paralysis of any cranial nerve, but complete motor paralysis of the right arm and leg. The right side of the chest moved in respiration, but less than the left. Incontinence of fæces, and retention of urine existed. The right limbs were hyperæsthetic, but no distinct loss of sensibility to touch in the left limbs could be ascertained, examination being difficult on account of the patient's state. The right limbs were perceptibly warmer than the left; an ordinary thermometer, bandaged on the inner ankle of the right leg, rose in five minutes to 97·4°, on the left, same place, to 95·4°. Towards evening there was a general rise in temperature, which, in the right axilla, was 103·9°, in the left 102·8°. The pulse rose to 128.

On the following morning the temperature was 103·2° in each axilla, but the pulse had fallen to 92, and the patient seemed better. He could move the right leg a little, but not the right arm. There was no spasm. No diminution in tactile sensibility in the left limbs could be found, but there was very distinct diminution in the sensibility to pain. In the right limbs there was increased sensibility to pain. On the trunk the sensation was normal as low as the nipple, below that it was increased on the right side, diminished on the left. Reflex action was almost abolished in the right leg, marked in the left leg.

There was a very marked difference in the irritability of the muscles and nerves on the two sides. The examination was necessarily not very extensive, but the results were quite clear. *Arms.*—The long extensors of the fingers presented the same faradic irritability, but to the voltaic current those on the left side were the more irritable, acting to two cells less than

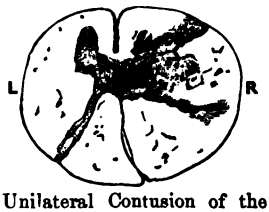
those on the right. The flexors of the wrist and fingers presented the same irritability on the two sides. The abductor indicis was a little more irritable to faradisation on the left side than on the right. The ulnar nerves, compared at the elbow and near the wrist, presented no difference in irritability. *Legs.*—The tibialis anticus was more irritable to faradisation on the left side than on the right, requiring 2 c.m. less of the secondary coil of Stöhrer's small induction battery. A similar difference existed between the two gastrocnemii: the left required 3 c.m. less. The muscle presented a similarly increased irritability to the voltaic current, acting to 4 cells less than the opposite muscle. The peroneal nerve was distinctly less irritable to both the faradaic and voltaic currents, on the left side than on the right. On the right side it contracted with 22 cells, on the left side only with 26 cells.

In the afternoon the temperature was 103·2° in the right, 102° in the left axilla. The urine, which was normal on the previous day, was found to contain one-fifth albumen. Next day, the loss of power was about the same, but the patient was delirious. His pulse was 160. The temperature in the right axilla was 104·2°; that in the left being 103·4°. Careful observations on the surface temperature of the limbs, made for me by Dr. J. S. Bury with one of Hawksley's surface thermometers, accorded with the difference in the axillary temperatures. The temperature over the biceps being, right 97·1°, left 96·5°; in the iliac fossa, right 99·5°, left 98·6°; over the gastrocnemius, 95·1° right, 94·8° left.

The patient gradually sank, and died sixty hours after the infliction of the injury.

A post-mortem examination was made by Mr. Gould, thirteen hours after death. It was found that the bullet had passed through the tongue, in the upper surface of which were two openings, one near the front, the other at the back; between them a probe could be passed. The hole at the back of the pharynx was on a level with the tip of the uvula, and a little to the right of the middle line. The bullet was found to have passed through the body of the second cervical vertebra, and to be lodged between the arches of the axis and atlas, just behind the vertebral artery, which was uninjured. It had not penetrated the dura mater, but a spiculum of bone had been forced through the dura mater, and was adherent to the surface of the cord. Extravasated blood marked

the track of the bullet. The cord was handed over to me for further examination, and it was found that, although apparently intact, the right half had been severely bruised. The right half was swollen, softened, and presented numerous extravasations, while the left half was free from extravasations and of nearly normal size. The sketch shows the appearance of a transverse section at this spot between the second and third cervical nerves. The anterior and lateral columns, and right half of the grey matter, contain numerous large extravasations. The outline of the grey cornua on that side is unrecognisable. A large extravasation occupies the right half of the central grey matter, the left half being unaffected. The extravasations are limited by the posterior cornu; the posterior column contains numerous red points, but is free from distinct extravasation, although it is swollen, the posterior median fissure being bulged to the left.



Unilateral Contusion of the Spinal Cord, between the first and second cervical nerves.

There was no evidence of inflammation of the membranes at this spot, but examination of the lower part of the cord showed that its posterior surface was covered by a layer, reddish-yellow in colour, situated beneath the arachnoid, and composed of pus corpuscles, with some blood discs. Laterally it was limited by the attachments of the posterior nerve roots. It did not exist in the cervical region, but commenced gradually about the third dorsal nerve, and extended as far as the lowest part of the lumbar enlargement.

Remarks.—The injury to the cord in this case, although a bruise, was so limited as to produce the effect of a unilateral section of the cord in the upper part of the cervical region, destroying the continuity of the anterior and lateral columns, and the anterior and posterior cornua on the right side, the posterior column being uninjured except by œdema. The resulting interference with the function of the cord is of considerable interest in relation to the results of experimental investigation, and of clinical observation in other cases.

1. Motor power was lost at first completely in the limbs on the same side as the lesion, but was preserved on the opposite side. This is in accordance with the well-established fact that the motor path, crossing mainly at the decussation of the pyramids, passes down the cord in the anterior and

lateral column of the side of the limbs concerned. But the day after the injury there was slight return of the power of moving the leg: up to the last there was no power over the arm. To what is this slight recovery of power over the leg to be ascribed? It might be accounted for by the supposition that the bruise left some fibres connected with the conduction of motor impulse to the leg so little damaged that they rapidly recovered functional power, all those forming part of the motor tract for the arm being destroyed. Such an explanation seems to me highly improbable, on account of the degree of damage which was revealed by the post-mortem examination, and of the known effect of such damage, even when slight, in arresting completely, for a considerable time, the transmission of the motor impulse. The condition is, I think, better explained by the opinion which Vulpian has formed from experiment, that the decussation of the motor path, although mainly at the decussation of the pyramids, is not confined to that spot, but takes place, to a less extent, lower down the cord. It is probable that such subsidiary decussation takes place much higher for the arms than for the legs; so high for the arms that it may have been implicated in the injury, and thus the complete paralysis of the arm may be accounted for. The subsidiary decussation for the leg, taking place lower down the cord, may have permitted, when the first shock was over, the re-establishment of slight voluntary power over the leg. The case thus affords some support to Vulpian's theory, and affords, I believe, the first evidence that it may hold good for man as well as for animals.

2. Sensation to pain was very distinctly diminished on the side opposite to the injury. This is in accordance with the view first announced by Brown-Séquard, and which has since been so abundantly confirmed, of the sensory path decussating in the cord. It was clear, however, that this loss of sensibility to pain only existed for the parts supplied by the branches of the nerves below the middle cervical. There was no loss in the parts supplied by the branches of the cervical plexus, in the neck or below the clavicle. It is to be assumed, therefore, that the sensory path from the middle and upper cervical nerves only crosses at the highest part of the cord, above the level of the injury. The injury to the cord in this case involved both antero-lateral columns and adjacent portion of grey matter. It affords, therefore, no evidence as to the path of common sensation, whether in the white or grey substance, which is still in dispute.

So far as it could be ascertained there was no loss of tactile sensibility corresponding to the loss of sensibility to pain. The patient stated correctly where he was touched in the limbs on which no sensitiveness to pain could be detected. If there was any loss it was certainly slight. This fact is of great importance in connection with the theory of Schiff, that the paths for tactile and common sensibility are different. He asserts that while the fibres conducting sensibility to pain decussate soon after they reach the cord, and the sensations are conducted in the grey matter on the opposite side, the tactile sensations are conducted by the posterior columns on the same side, and their path does not decussate. In this case the posterior column on the side of the lesion was undamaged, and it certainly supports Schiff's opinion that the tactile sensations are conducted by the posterior columns, although it leaves the question of their decussation undecided, since both posterior columns were little changed.

The phenomena of the hyperæsthesia of the paralysed leg and the state of reflex action may conveniently be considered together.

Reflex action was lessened, almost abolished on the side of the lesion, was in excess on the opposite side. The latter is the common condition in unilateral injury. It is not common for so great a depression of reflex action to be observed on the side of the lesion.

The limbs on the side of the lesion showed the hyperæsthesia which has been so often observed.

This hyperæsthesia is a phenomenon very difficult to explain. Occurring immediately, as it has been proved to do, it cannot be ascribed to local inflammatory process. Dr. Michael Foster, after a careful review of the phenomenon and its possible explanation, concludes that it is probably due to the withdrawal, by the injury, of an inhibitory influence of some higher centre in the grey matter by which the sensation is conducted—an influence which in the normal condition moderates the action of the grey matter. He suggests that this over-action of the grey matter by which the sensation is intensified, may be similar to, perhaps the same as, that by which reflex action is intensified, and which reaches its height in the powerful reflex actions which attend a complete section of the cord. The phenomena of this case do not accord well with this explanation, since the hyperæsthesia was associated with diminished not increased reflex action, and the reflex

actions were in excess on the side on which sensation was diminished.

This excess of reflex action on the analgesic side was well marked in this patient. To what is it to be referred? Physiological experiment shows that in the normal state the reflex action of the lower part of the cord is restrained by a higher centre, which in the lower animals is situated in the optic lobes, and that the excessive reflex action observed on complete section of the cord above the lumbar enlargement is due, in part at least, to the withdrawal of this higher inhibitory influence. If this explanation be applied to this case, we must assume that the damage to the right side of the cord, not only arrested the transmission upwards of painful sensory impressions to the encephalic centre, but arrested also the downward transmission of the central inhibitory influence, hypothetically, in man, of the optic thalamus.* From this it would follow that the downward path of this influence is the same as the upward path of common sensation, that it passes downwards along the same side of the cord, and does not cross to the opposite side until the lower part is reached.

In considering the cause of the increased sensibility of the paralysed side one cannot but attribute considerable significance to the remarkable contrast presented by the two limits. In the left there was analgesia and increased reflex action, in the right there was hyperalgesia and diminished reflex action. If we attribute the former, the increased reflex and diminished sensation, to a severance of its connection with the right optic thalamus, it seems reasonable to ask whether the condition of the right limbs, with increased sensitiveness and diminished reflex action, may not be due to an overaction of the left optic thalamus. It is possible that such overaction may result from a section of the cord, although we may not be able at present to recognise the mechanism by which it is produced. A possible mechanism may however be this. The other thalamus has its downward action arrested, and this arrest may lead to increased action upon its fellow by the commissural connection, and so the assumed overaction of the thalamus on the uninjured side may be produced.

3. The higher temperature on the side of the lesion is in strict accordance with previous observations. It was here

* Many pathological facts suggest that in man this inhibitory influence is exerted by the optic thalami, rather than by the corpora quadrigemina.

particularly uniform, and as distinct in the pyrexial elevation as in the lower degree.

4. The change in the irritability of nerve and muscle in the legs is of considerable interest, and has not, as far as I am aware, been observed in any similar case. The change in the irritability in the arm was slighter, and would have little weight were it not for its correspondence with the state of the legs. The irritability of the muscles was greater on the side opposite the lesion to both faradisation and the voltaic current: that of the nerves was greater on the side of the lesion. The difference in each case was indubitable. It was not sufficiently considerable to indicate which was the abnormal state. When we consider, however, that in these cases the ultimate muscular wasting is always on the side of the lesion, there can be little doubt that the condition on that side may be regarded as the abnormal one. The nerves, therefore, on that side, presented an increased irritability to both the faradaic and the voltaic currents. The muscles, on the other hand, presented to each a depression. The condition of the nerve is easily explicable. An irritating lesion in the motor tract of the upper part of the cord often causes a secondary change in the nerves and muscles of the paralysed legs, the transmitted irritation so affecting the anterior cornua below as to lead to the alteration in their nutrition, and, therefore, to the electrical irritability of the nerve-fibres arising at the spot. That alteration is ultimately a depression in the nervo-muscular irritability. The change has this peculiarity and difference from a primary lesion of the motor nerve, or grey matter from which it arises, that it is similar to both faradisation and voltaism. The ultimate depression is frequently preceded by an initial transient increase in irritability, and it is this increase which was presented by the nerves of the paralysed leg in this patient. The diminished irritability of the muscles is less easy to comprehend, and I can only suggest, since the irritability of the muscles is only affected through the motor nerves, that the initial increase in the irritability of the nerve-trunk may be accompanied by a transient depression in the irritability of the extremities of the nerve in the muscles, giving place to an increase as the molecular change in the nerve-fibre, to which its increased irritability was due, travels down to the extremity of the nerve.

5. The accumulation of sero-pus in the posterior aspect of the cord, in the subdural meshes, is a point of interest, for

I have observed it in other cases of slight meningitis. It is no doubt due to the effect of posture, the head and neck being raised, and leading to the descent by gravitation of the movable particles from the cervical part, and their arrest as soon as the lowest level of the cord is reached in the upper dorsal region.

It was apparently to the local inflammation that the considerable elevation of temperature was due. It was hardly sufficient to suggest a direct effect of the nerve-lesion in the body heat.

IX.—*A Case of Left Hemiplegia and Hemianæsthesia, with general diminution of motor power and of sensation, associated with loss of speech and impairment of the mental faculties, ataxy of the upper extremities, peculiar voice and articulation; probably due to embolism of the basilar artery: recovery.* By J. BURNLEY WALKER, M.D. *Communicated, with remarks, by* W. H. BROADBENT, M.D. *Read November* 9, 1877.

ANNA MARIA TAYLOR, æt. 26, married; medium height and weight; sanguine, nervous temperament; not left-handed. Her mother has suffered from a temporary attack of insanity. Has always been well and strong. Four years ago miscarried at the fourth month; and in twelve months gave birth to a still-born child when seven months pregnant. She was confined of a living female child at full time on Tuesday, December 19, 1876. The labour was natural in every respect, and not unduly protracted. Patient did well after her confinement, until Saturday evening, December 23, when she became excited and annoyed by her husband coming home intoxicated; she immediately *had a rigor*. On Sunday, 24th, about 6 o'clock a.m., while sitting up in bed taking food, she suddenly fell back on the pillow as if in a swoon. When I saw her at 9 a.m., she was lying on her back, totally unconscious, and could not be roused: when liquids were supplied by the mouth, she attempted to swallow, but most ran out again at the angles of the mouth. The face was blanched and drawn *to* the *right* side, presenting the usual appearances of *left* facial paralysis, except that there was *no* affection of the

eyelids. The pupils were natural and *equal*, acting normally to light. There was no elevation of temperature. The pulse was regular, but slow and small, being almost imperceptible at the wrist, beating 48 per minute. The cardiac sounds could only be indistinctly heard through her thin chest-walls, more particularly the first sound. The breathing was slow and shallow.

Administered brandy and ether, with ammonia. Hot bottles to feet, with sinapisms to nape of neck and calves. The hair was cut off, and cold lotions applied to the scalp.

In a few hours she could be roused so far as to protrude her tongue, which strongly deviated to the left. There was total paralysis of the *left* arm and leg, and some diminution of power in the right limbs. Sensation was greatly impaired on both sides, but especially on the left. Reflex phenomena (induced by tickling the soles) were diminished, but not abolished; this being more marked in the left than the right. The urine and fæces were discharged unconsciously in bed: hence no test was made for albumen.

By the free administration of brandy (ʒj every hour) the pulse rose to 60, and remained there; but when the quantity was diminished the pulse again sank, on one occasion falling as low as 42.

On Monday she had so far recovered consciousness as to give signs of recognition when her friends approached, but she was speechless, and still lay perfectly motionless, except that she rolled her head about, as though in pain. Her milk left her; but there was never any swelling or tenderness of the abdomen, nor was there any cessation of the lochia. By the Tuesday the temperature rose to about 101°, the pulse remaining at about 60. Gradually the paralysis diminished, so that in two or three weeks she could turn in bed, but could not rise, or help herself in any way. The expression of her face seemed almost idiotic, as did her laugh and gestures. She was quite speechless; still she seemed to understand all that was said to her. Progress was steadily made under the use of iodide of potassium, and eleven weeks after the attack she spoke for the first time, but only in monosyllables, and very indistinctly. Every word was uttered in a very loud tone, and in a jerking manner.

When asked to name any article, she did so correctly, and without hesitation; but when it was held out for her to grasp she had to make several attempts before she could co-ordinate her muscles to act in the right direction. The same

thing occurred when feeding herself, she had to try often before the spoon could be introduced into the mouth.

May 15. Nearly five months after the attack: patient's facial paralysis has entirely disappeared. She can feed herself; can walk about the house without assistance, but as though intoxicated; she can converse, but in an unnatural, excited, and jerking manner. Is gaining flesh fast. For some weeks has been taking Easton's syrup.

Remarks by Dr. Broadbent.

I saw this case with Dr. Walker at the end of March, when the patient had been able to speak two or three weeks. She had made rapid progress, and was capable of giving short and simple replies to questions. Her speech was slow, drawling, and peculiar in several respects. The voice was unduly loud and altogether unnatural, slightly nasal in tone; there was excessive modulation and prolongation of individual words. Articulation could scarcely be said to be indistinct, but it was uncouth. The vocalisation resembled, though not closely, that of a person compelled to speak while weeping violently. The patient was, however, smiling almost idiotically all the time.

Her mental condition appeared to be such as is best described by the term childish. My visit evidently gave her great pleasure, but this was not expressed in words, but in excessive smiles, and in her voice and gestures. She obviously understood what was said, but no information of importance could have been obtained from her.

She moved her hands freely but vaguely. When asked if she could walk, answered 'No, I cannot,' but rose from the sitting posture with very little assistance, and walked timidly, slowly, and awkwardly about the room while simply taking hold of a finger, which gave her confidence but no real support. Her steps were short, irregular, and unsteady, and she turned with much hesitation. It would be difficult to say whether the unsteady gait most resembled that of cerebellar ataxy or that sometimes seen as a result of cerebral softening.

The fundus of the eye presented no abnormal appearance.

The patient now (Oct. 1877) can walk and carry her child for some distance, but she finds it very difficult to dress it or herself. She fumbles over it, and there is still want of precision in the movement of the hands, more marked in the left than the right, but evident in both. She can pick up a

pin with either hand, but more promptly with the right; when the eyes are shut there is considerable difficulty in doing this, and much groping, especially with the left hand. She cannot yet cut bread, being unable to control the knife.

Her intellect is feebler than it was before her illness, but she attends to her house, and converses fairly well, the voice and intonation still being peculiar.

This case is one of extreme interest and importance. There was left hemiplegia, with complete loss of speech for eleven weeks. Had the patient died during this period the case might have been placed on record as one of left hemiplegia with aphasia, due to a lesion, which would in my opinion have been found to affect the posterior part of the brain. It was clear, however, that the loss of speech was not simply loss of the power of finding words in which to express ideas clearly and distinctly present to the mind, which is what is meant by aphasia; nor was it amnesia, in which the memory for words is lost.

The mental powers were far more seriously impaired than in either of these conditions. The patient was for a time perfectly imbecile, and the loss of speech might almost have been considered as due to complete absence of ideas to express. There was, however, something more than this —the mechanism of vocalisation had been in some way affected, as is evident from the peculiarities which have been described.

I have already remarked that while the patient was speechless the case might easily have been considered one of aphasia, but as speech was regained the difference became obvious, and it may be well to enumerate the points of diversity.

1. *The Modification of Phonation.*—In aphasia the voice is not affected, and the few words which are often retained, such as 'Yes' or 'No,' are pronounced naturally. Here the voice was unduly loud, and its tone altogether peculiar.

2. *The Peculiar Modulation.*—Her talking resembled the whining requests or answers of a spoilt child—the words long drawn out, and varying in pitch.

3. She was never at a loss for words. Such simple words as she required came at once.

On the other hand the speech was quite distinct from the tremulous utterance of sclerosis, or the imperfect articulation due to paralysis of tongue or lips from mischief in the medulla or pons.

The loss of co-ordination of movement is a feature of the case worthy of remark. It was only after two or three attempts that she could take hold of an object. This might have been attributable to double vision, but there was no complaint of any such thing, and no squint was ever observed. Double vision again would not interfere with the guidance of the hand to the mouth, and the patient failed in this; she missed the child also when she tried to kiss it. Nor can the ataxy be explained by the loss of sensation, since it survived complete restoration of sensibility in all its forms. It must, therefore, have been due to derangement of the motor apparatus.

Passing now to the question of the nature and seat of the lesion, the circumstances of the attack point to embolism of a cerebral artery as the cause.

The symptoms were not those usually attending the blocking up of the sylvian, or anterior cerebral, or carotid artery; and plugging of the posterior cerebral, or even of this and the superior cerebellar artery would scarcely be adequate to the production of all the effects observed. Both sides of the brain suffered, for, though left hemiplegia was the most prominent effect, there was great weakness of the right limbs in the early period of the illness, and the right hand remained almost as clumsy as the left; the want of power and of co-ordination in the lips also when seen by me three months after the attack, was equally manifest in both.

I am, therefore, led to the conclusion that the embolus was impacted in the basilar artery at its bifurcation, and that either the obliteration of the right branch was more complete than that of the left, or the posterior communicating artery was smaller on the right side, so that this half of the brain received less blood, giving rise to the left hemiplegia. The cerebellum would be to a great extent deprived of blood, as well as the posterior part of the brain, and to this may be attributed the want of co-ordination of movements guided by vision, while the general impairment of sensibility would be explained by the imperfect supply of blood to the thalami and pons. On the supposition that the basilar was obstructed, the effect on the action of the heart observed in this case is more easily understood. The pulse was only 48, and so weak as scarcely to be perceptible. Hæmorrhage or embolism in the brain proper, or affecting the central ganglia, is not attended with any such depression of the heart's action; while this is sometimes observed in lesions of the pons, the

circulation in which would be affected by plugging of the basilar artery.

The following cases are briefly reported to the Society, in connexion with that of Dr. Walker, as resembling it in some respects.

In all except the last, there was for a time a temporary condition of speechlessness, which might have been taken for aphasia, and had death occurred during this period they might have been put on record as examples of aphasia, without lesion in the third left frontal convolution. The subsequent history showed that, as in Dr. Walker's case, there was no loss of memory of words, and no forgetting how to say words, and that the damage in the mechanism of speech had not taken place at the point where ideas are translated into language, but at a lower point concerned merely with utterance. The last case, in which cross paralysis indicates the pons as the seat of a lesion giving rise to impaired phonation and articulation, is related as aiding to identify the locality of the lesion in the more complicated cases.

1. *Left Hemiplegia, with imperfect and peculiar phonation and articulation, after more extensive paralysis and temporary loss of speech.*

Emma S., an unmarried girl, aged 20, was admitted into St. Mary's Hospital November 15, 1872.

She had had rheumatic fever four years before, and a systolic murmur was audible at the apex of the heart, but the heart was of normal size, and the pulse was regular.

Nine months before admission had borne an illegitimate child, which she had suckled up to the time of her illness, which, on November 15, had lasted ten weeks. The apparent cause was emotion, and she was seized on a Thursday with severe pain in the head and back, and violent vomiting; on the following Saturday she was delirious. She screamed violently, and struggled. The pain in the head, vomiting, and delirium lasted ten days or a fortnight. Speech was said to have been lost, but it appears rather to have been that it was for some time so indistinct that she could scarcely be understood, and the left limbs were paralysed, the right limbs also being very weak, or partially paralysed.

She had improved during the remainder of the ten weeks, but on admission had almost complete left hemiplegia, the arm being less completely paralysed than the leg; the left side of the face was affected, and to a slight degree the tongue.

The speech was very peculiar. She answered questions correctly, but very slowly; laryngeal phonation was imperfect, and the voice was a hoarse half-whisper, each syllable requiring a separate effort; the articulation also was indistinct.

Her disposition was altered, and from being active and lively she had become quiet and taciturn.

The optic discs were rather more pink than usual, but otherwise normal.

Pulse 90; temperature 99·2°; urine sp.gr. 1·005, containing no albumen. On admission she had only been able to use the right hand for two or three weeks, so that she could not feed herself, but on the 20th she could write and express herself in writing. She could not stand alone at this time.

There was gradual improvement, and on December 11 the patient could walk alone, and use the left hand in eating; but her speech was little better. When she began to walk about she was very timid, and sought support, and up to the end of her stay in the hospital her speech had the same peculiarity, and was always worse towards the end of the day, and after exertion. She remained very dull, and was almost useless in her home for a time after she had left the hospital, but she improved greatly in May—five months after the attack—while taking iodide of potassium, and recovered the use of her limbs; her speech also became less indistinct, and she was more cheerful.

2. *Paralysis of all the Limbs, and Speechlessness. Peculiar phonation and articulation during recovery.*

Eliza T., a married woman, aged 27, came as an out-patient, June 27, 1870. Three months previously, while suffering from small-pox, five weeks after the birth of a child, she had a fit in her sleep. She woke up suddenly, and found herself speechless, and unable to move a limb. It was some weeks before she could say a word that anyone could understand. She began to get use in her legs about a month after the attack; of her hands, later. She had been able to walk for three weeks, and to feed herself for the same time, but she was still unable to sew, and in walking her steps were short and uneven. Her grasp was powerful, and she could pick up a pin; but she wrote with great difficulty, and very badly. There was no affection of sensation at the time of her visit to the Hospital.

The interest of the case was the peculiarity of the speech. The intonation was loud and unnatural. There were no mis-

takes in words, and no difficulty was experienced in making out what she said, but the speech was slow, and the articulation laboured and indistinct, each word requiring a separate effort, and being pronounced with undue and peculiar emphasis, perhaps on account of the effort.

At first she could not masticate her food, and had difficulty in deglutition, and there was dribbling of saliva when she spoke. She still chewed meat and swallowed badly, and fluids were apt to choke her. She improved a little, but did not attend long.

3. *Left Hemiplegia, of peculiar character, with temporary loss of speech, and permanent affection of articulation and phonation—probably syphilitic.*

A schoolmaster, aged 32, four years before he came under observation, had contracted syphilis. A year later he suddenly lost the use of his left limbs, while in bed, so completely that he was unable to turn in bed, and it was six months before he began to walk. A year after the attack he gradually lost his speech, and for six months could not speak at all. After this he began to talk again, and the speech had gradually improved up to the time of his admission into St. Mary's Hospital, October 10, 1871. Deglutition was affected, fluids escaping from the mouth, and saliva also.

The hemiplegia was attended with tonic spasm; the face was very slightly affected.

The speech was very peculiar; the voice squeaky, forced, and unnatural; the enunciation slow and laboured, articulation indistinct, the words being brought out one by one with great effort. The action of the lips and of the tip of the tongue was imperfect, and the tongue altogether seemed clumsy. When made to read the articulation grew worse and worse, till the words were indistinguishable. He often went into peculiar fits of laughter, consisting of an interminably long, silent, expiratory period, followed by a loud croupy inspiration.

4. *Paralysis of left limbs, with rigidity, and of right face. Affection of voice and articulation.*

Geo. T., aged 32, a poulterer, was admitted into St. Mary's Hospital, May 17, 1872.

A few days after Christmas, at which time he had been

hard-worked, anxious, and sleepless, he fell down, vomited, thinks he lost consciousness, and was found to have lost the use of the left limbs. His speech also was so indistinct that no one but his wife could make out what he said. For five weeks afterwards he was stupid, saw phantasms, and on first going out thought the pavement sprung up and hit him in the face. Information as to the state of sensibility of the limbs at this time could not be obtained.

When admitted he was able to walk, but the left lower limb was carried stiffly, not dragged. The left arm was weak and slightly rigid. The right side of the face gave evidence of paralysis in smoothing out of the muscular markings of the cheek and brow, but he could whistle, show the teeth, and wink either eye, though the movements were better in the left face. The tongue deviated slightly to the right.

Here, again, the speech was peculiar, both phonation and articulation being affected. The voice was either a whisper or a squeak; speech was slow, and word by word, with a distinct effort for each.

Deglutition was difficult.

His manner was peculiar and different from what it had been before the attack. He had formerly ill-used his wife, but she now had the best of it.

There was no albuminuria, and no heart-disease. The optic discs were vascular, but not otherwise altered.

X.—*Two Cases of Severe Iodide of Potassium Eruption.* By Tilbury Fox, M.D. *Read November* 23, 1877.

THE knowledge which we possess, as to the power of iodide of potassium, to produce one or more forms of eruption in the skin, and as to the nature of the eruptions so induced, has been up to the present time unsatisfactory.

It may be affirmed, however, that, clinically, there are three forms of eruption which, without doubt, iodide of potassium *can produce*: firstly, *purpura*; secondly, *acne*; thirdly, a *quasi-bullous* disease.

As regards *purpura**, Ricord†, Virchow†, Bumstead‡,

* N.B.—Since this paper was read Dr. Abbe of New York has recorded another case, and Dr. Stephen Mackenzie has read a very interesting paper on the subject at the Medico-Chirurgical Society.

† Quoted by Bradbury.

‡ 'American Journal of Medical Sciences,' July 1871.

Ringer*, and Bradbury† of Cambridge, have observed instances, and three cases have lately been published by Fournier‡.

As to *acne*, it may be said that few practitioners of experience can have missed seeing many examples of iodide acne. It is not limited to the face but may occur in different parts of the body. Sometimes the spots are very hard and shotty, and not very distinctly acneiform because of the little purulency present. At other times the spots may be many, in fact widely scattered over the body, especially the arms and legs, and attain a large size or be very purulent, so that small-pox in one of its stages may, as regards early eruption, be fairly simulated for a time. I have often been consulted for supposed syphilis when the disease has been simply iodide rash.

Dr. Fischer, of Vienna, wrote an elaborate paper on iodide of potassium rashes, and described many varieties of the preceding types of acne, but makes no mention of the *quasi-bullous* form to which I now wish to specially draw the attention of the Society, and I submit the particulars of two cases in illustration of it, with drawings:

Case 1 (*see Plate III.*) is that of an in-patient of the Throat Hospital, whom I was asked to see in consequence of the outbreak of an odd eruption which occurred soon after his admission, and I am indebted to Dr. Semon for elaborate notes of the case. W. W., a hawker, aged 27, looking very cachectic, and very feeble, was admitted into the Hospital for Diseases of the Throat, on March 13, 1877, suffering from advanced tertiary syphilitic disease of the pharynx, &c. He thinks he contracted the primary disease about four years previously, and has never suffered from any other illness that he remembers. The present disease first became noticeable at Christmas 1876, and he was then under treatment for a short time without benefit. On March 13, 1877 (the day of admission), the patient was ordered to take ten grains of iodide of potassium three times daily, and have local applications to the throat of nitrate of silver. Four days subsequently (on the 17th), the dose of iodide was increased to 15 grains three times daily, and next day (the 18th), there appeared on his forehead, both eyelids, and scattered here and there on the face, the scalp, and nape of the neck,

* 'Practitioner,' March 1872.
† 'British Medical Journal,' Feb. 4, 1871.
‡ 'Revue Mensuelle de Méd. et de Chir.' No. 9, 1877.

small vesiculated spots, similar to Acne communis, each having a black dot in its centre. The drug was continued the next day (the 19th) when the acne pimples had become large vesicles filled with a milky fluid soon changing into thin inodorous pus. Meanwhile new eruptions similar to the first had appeared in the same situations excepting two spots on the upper back. Thinking it was an iodide rash the drug was discontinued on March 20 and medicine was not given for twenty-four hours. However a few more spots made their appearance and the old ones continued to increase in size and development. Some burst and discharged a thin, whitish, inodorous pus, and it was then seen that the base was covered with florid granulations. The patient complained greatly of weakness and of the pain occasioned by the eruption. The temperature was normal; pulse 70 and feeble. A mixture of quinine and iron with the sulphate and carbonate of magnesia was then administered, and the ulcers simply kept clean. No new spots appeared after March 23; the old less-developed ones gradually disappeared, and the ulcers slowly healed; the few spots that came out after the iodide was discontinued rarely developed beyond the pimple-stage. On following up the history of the man's treatment before admission, I found that he had not taken any iodide of potassium whatever.

Case 2 (*drawing shown*) was that of a woman, aged 39, under the care of Dr. Broadbent, to whom I am much indebted for allowing me to use the case, and make extracts from his ward notes. The patient died in St. Mary's Hospital from chronic Bright's disease with considerable old pleuritic lung and pericardial mischief. She was in no way syphilitic. She died unknown to me, and so I could not procure any specimens for minute examination.

On February 20, 1877, a few days after admission, it was stated in the notes that 'no eruption existed,' but the lips were sore. On February 21 the patient commenced taking a mixture containing, with other ingredients, a small quantity of arsenic and three-grain doses of iodide of potassium. On the 25th, i.e. on the 5th day of the exhibition of the iodide, an eruption of pale-coloured *shotty* spots was observed over the forehead and backs of the hands; there were also two pustules on the under lip and one on the side of the nose. It would appear that at first a suspicion of variola was entertained, because the notes state that the pustules were not umbilicated. The temperature was 101·7°F. On the

26th the iodide mixture was discontinued, and bark and carbonate of ammonia were substituted. The eruption at this time was well marked about the backs of the arms and elbows. On the 27th the spots are stated to have increased in size, and to contain some fluid, and not to be umbilicated. They had not notably increased in number, were sore to the touch, and a yellow scab had formed on the pustule on the nose. Patient very ill. On the 28th the spots and pustules had much enlarged, and many had formed bullæ, the size of threepenny pieces, containing turbid fluid and surrounded by an inflammatory zone. On March 1 (the 7th day of the eruption) the mouth was sore; the bullæ had increased in size, and a greyish purulent fluid exuded from them. On March 2 the bullæ appeared to be more solid, and inflamed, and were very painful to the touch. On March 6 the bullæ had almost entirely disappeared, and the rash elsewhere was fading rapidly.

On March 17 the patient commenced taking the iodide again, in the same doses as before, and on March 21, or the 5th day of taking the medicine, precisely as before the same peculiar papular rash reappeared. On March 26 the papular eruption had progressed and developed into large severe ecthymatous elevations containing dark sanguinolent or puriform fluid. They were situated about the sides of the nose, on the cheeks and forehead, the arms, hands, and a few on the legs. The tongue was sore and there were distinct ulcers with ashy-grey sloughs stated to have been formed from pre-existent bullæ.

The patient at this time had severe hæmoptysis, and was very ill and weak. (The drawings shown represent the appearances seen on the outer aspect of the right arm; the ulceration of the tongue; and a condition, not referred to in the notes, about the left knee, where there was a fungating ulceration.) On April 2 the rash was rapidly vanishing, and the ulcerations had become clean and healing. On April 9 the patient died. There was, unfortunately, no post-mortem made.

Remarks.—Bumstead*, of New York, in 1871, was the first to record definitely the particular form of iodide eruption which my two cases illustrate, at least I cannot put my hand upon any earlier notice of it. He described a *fourth* attack of a pemphigus-like eruption, due to iodide of potassium, in a young man treated for syphilis. The eruption made its appearance after three twenty-grain doses of the

* 'American Journal of Medical Sciences,' July 1871.

drug. The bullæ, some of which were one and a half inches in diameter, occurred on the back of the neck, forehead, face, and backs of hands. They had thin walls, which quickly ruptured, and some were filled with serum, whilst others were turbid or bloody. Bumstead mentions that he had searched far and wide for mention of other cases, but could find none, excepting by Boinet in his Iodothérapie (2nd ed., 1865, p. 68) who states that Cazenave had seen 'eruptions of bullæ filled with sero-sanguinolent fluid, which are readily torn, and which may be followed by ulcerations difficult to heal.'

My attention, however, was first particularly drawn to the point by the reviewer of a book of mine in the 'Edinburgh Medical Journal' for August 1873. This writer objected to the statement that iodide of potassium could produce a petechial rash, and there he was clearly wrong; but, whilst admitting that acne almost invariably results from full doses or long continuance of the drug, he added that sometimes boils occur later on, and further, that 'the most troublesome of all affections produced by iodide of potassium is a phlyctenular eruption, which sometimes breaks out as large pemphigus-like bullæ over the surface of the body, and at others as smaller, and, in many cases, umbilicated, vesicles; in every such case the fever often is high, and the body-distress extreme; no tolerance can be established, and the drug has to be given up. When this idiosyncrasy exists, iodide of sodium is not a bit more readily tolerated, often less so. It is not a frequent affection, fortunately occurring not oftener than once in a hundred cases, perhaps not so often.' Subsequently, in Vol. VIII., for 1875, of the 'Clin. Soc. Trans.' is a paper by Mr. Hutchinson, on 'The Cause of some of the Eruptions classed as Hydroa,' in which the author gives the notes of four cases, which he believes were those of iodide eruptions, and he states his conclusion that the use of iodide of potassium is the unsuspected cause of many of the eruptions described as hydroa.* The one undoubted case is figured in the Sydenham Society's Atlas (Plate XXXIII.), and the eruption was limited, as in Bumstead's case, to the face, forearms, and hands. Mr. Hutchinson says: 'The eruption consists of vesications, or small bullæ, from the size of a

* I think it is to be regretted that the term Hydroa should have of late been used so loosely, and not restricted in its employment to that particular herpetiform eruption to which Bazin originally applied it. Much confusion has arisen, and is likely to result from this mistake.

shot to that of a pea, or even to that of a cherry. These are usually surrounded by an erythematous base, and not unfrequently by a certain amount of swelling of the skin from inflammatory deposit. In its very earliest stage the pimples which are about to develop into bullæ remarkably resemble those of small-pox, but as they run their course very rapidly the differential diagnosis is soon easily made. The vesications become large, lifting up a very delicate layer of epidermis, which presents no umbilical depression, and their contents become grey and opaque, but not distinctly purulent.' '. . . . . the disease is invariably symmetrical, and is always sudden in its outbreak,' p. 152. 'Although there is no umbilicus yet a peculiar feature is sometimes assumed by the vesication spreading at its margin and sinking in the centre, the patch then becoming as large as a shilling.'

In the Report of the Medical and Surgical Registrars of the London Hospital for 1875* is the account of a man, aged 26 years, who was admitted under Mr. Hutchinson's care, and who was affected by very severe iodidism, with the development of a pustular eruption, ending in the patient's death. On his face, arms, legs, and body, but especially the face and legs, were innumerable, purple or red, irregular elevations, raised a quarter or half an inch above the ordinary level of the skin; semi-fluctuant, fluctuant, or firm; varying in size from a hazel to a large walnut, some with surface entire, others with the summit abraded, and discharging a thin, yellowish, offensive stuff, single or conglomerate with inflamed areolæ. The patient died eighteen days after admission, but the post-mortem threw no light on the case, but there was a history of syphilis and the man had been taking iodide of potassium. In the course of a discussion on Hydroa at the New York Dermatological Society†, on December 13, 1876, it is reported that 'Dr. Taylor related two interesting cases of bullous eruption due to iodide of potassium. A woman after taking less than one drachm, became sick, and presented a swollen tongue, with bullæ on the face containing blood, and others upon the forehead, arms, tongue, and roof of mouth, with sero-purulent contents. Bullæ upon gluteal region were followed by ulcers. The second case was that of a woman who awoke at night with chills and itching of the skin. Large bullæ appeared on the arms, neck, and legs. When seen they were unbroken,

* Also 'Lancet,' Nov. 13, 1875. † 'Archives of Dermatology,' April 1877.

and looked as though resulting from a burn. She had eaten nothing unusual, and was well in a day or two.'

As I was anxious to learn how far my experience of the rarity of this eruption agreed with that of others, I communicated with many who I believed must be able to give me good information on the subject. The general result I will briefly summarise. Mr. James Lane says: 'I think I may say that I have prescribed iodide of potassium as much as most men, and in all sorts of doses. I have frequently seen it cause pimples—small pustules if you like—but never anything that I could, by any stretch of imagination, consider to be bullous, or what I should think of dignifying by the name pemphigus.' Mr. Berkeley Hill says, 'I never saw a bullous eruption produced by iodide of potassium. Those I have seen had solid bases for the vesicle.' Mr. Alfred Cooper, Mr. Coulson, and others, bear similar testimony. Professors Hardy, Bazin, Guibout, and Fournier say they have never seen a bullous eruption induced by the iodide. M. Ricord tells me he has 'rarely seen a bullous pemphigoid eruption which could be attributed to the drug.'

I take it then that this quasi-bullous eruption is very rare, much rarer than my reviewer before-mentioned allows. But this gentleman is certainly correct in saying that patients in whom it occurs possess an idiosyncrasy as against the drug.

I will only offer a few concluding observations upon the two cases I have described to the Society.

A. In the *first place* the details of these cases show that

(*a*) Patients, in whom this so-called bullous or pemphigoid eruption in a well-developed form is produced, possess a peculiar idiosyncrasy as against the drug. The existence of this special susceptibility is no doubt very rare. Although the drug frequently produces a distinct toxic effect on the skin, as shown by severe acne, yet this severe kind of rash does not appear save as the rarest phenomenon.

(*β*) This pemphigoid rash is excited not by large and long-continued dosing with the iodide, but produced immediately under the influence of small and few doses, a fact pointing strongly to the existence of the before-mentioned idiosyncrasy.

(*γ*) The action of the drug in these cases is not limited to the skin, but produces great depression, with or without pyrexia, ulcerations of the mucous membranes, &c.

As to the special conditions of health which predispose

to the occurrence of the particular eruption under notice little that is definite can be said. But I think it important to mention in passing that in one of the cases there seemed to be indications of non-syphilitic enlargement of the cervical and mediastinal glands with splenic and renal mischief of an albuminoid nature, and in the syphilitic case there appeared to be some splenic enlargement.

B. In the *second place*, with regard to the nature of the eruption in these severest forms: it is my opinion that the designations 'bullous' and 'pemphigoid' convey a most incorrect idea. The eruption is not made up of true bullæ, nor do the spots develop like bullæ. The affection is in no way related to pemphigus; or to hydroa as defined by Bazin who originally described it. In the two cases, the particulars of which are now recorded, the eruption is said to have been papular in the early stage, and to have had, a little later, solid bases. In some parts they resembled acne simplex, in others they vesiculated, and subsequently simulated variolous pustules; at a later stage ecthyma; and finally bullæ, filled with milky contents, or discharging smegma; and these bullæ possessed peculiar solid bases wholly unlike true bullæ, and answering rather to large molluscum contagiosum tumours with semi-fluid instead of more solid contents. Some, or indeed most of the smaller and larger forms of eruption, in both the earlier and later stages, showed a dark spot in their centre, which I believe in most instances indicates the seat of the opening of a hair follicle.

I believe, from careful examination of the eruption in the different stages, that, although the iodide *may* excite a local inflammation of the *non-follicular* parts of the derma, yet in reality the majority of the spots are situated at the hair follicles, and result from excessive stimulation of the sebaceous glands of the skin and parts around; and that these unusual and severe phases of eruption are exaggerated acneiform spots with excessive and *altered* secretion of sebum, though they look like bullæ. Under ordinary circumstances, during the administration of the drug, when a rash results, acne is produced, though the purulent centre may not be well marked, but the connective tissue of the gland wall being specially implicated the rash then appears papular and shotty. A careful examination, however, discloses at once its real follicular site. If the drug acts more vigorously an ecthymatous eruption is produced because of the increased

area to which the inflammation of the connective tissue extends, so that the places have hard, red, and painful bases. In other cases however a rapid and excessive secretion of very fluid sebum of a milky character results concurrently with increased stimulation and consequent swelling and effusion into the parts around the glands, and in this case, no doubt, serosity is poured out to be admixed with the sebum, and so large, rounded, raised, hard-based swellings are formed with fluid or semi-fluid contents, and these approximate to bullæ in aspect. These so-called bullæ may then burst and discharge smegma, or milky contents, as detailed in the two cases I have recorded.

The disease is altogether different pathologically from pemphigus or hydroa. The fact is that the rapid and free effusion of milky sebum and its intermixture with serum is so sudden *that the follicular or sebaceous seat of the eruption is at once travestied, and it is only by watching the development of the spots* that the true nature of the eruption is seen.* A similar series of changes occur in the case of severe bromide of potassium rash, although its naked-eye characters offer some points of distinction. The ulceration which occurs here and there in the iodide eruption is accounted for by the intensity of the inflammation induced by the severe tension and subsequent bursting of the so-called bullæ, and by the cachectic condition of the patient. The ulcerated surfaces rapidly granulate and heal, but the healthy granulations are preceded by a kind of papillomatous growth, or white pultaceous fungatory mass, which I think is the result of the inflammation about a number of the sebaceous glands. I cannot say positively whether the sores on the tongue (shown in one of my illustrations) were preceded by any such lesion as bullæ. As far as I could gather the tongue simply inflamed in spots, which rapidly broke down into the ulcerations portrayed. Another point to be noticed is the excessively painful character of the eruption. The least touch sufficed to give acute pain in the female patient.

* It is to be noticed that, in the description of the so-called 'bullous' eruption given by others, it is expressly stated that the rash presented in the early stage the aspect of acne, and in the severe case figured in the Sydenham Society's Plates and called hydroa, although the majority of the spots are represented like bullæ, yet there are a few like those I have shown in the Plate which illustrates this paper. The facts I take to be significant of the glandular origin of the so-called bullous rash for which I am contending.

U OF M

H. Minters lith. Minters Bros chromo.

Dr Tilbury Fox's case of Iodide of Potassium eruption.

XI.—*A Case of Popliteal Aneurysm, for which the Femoral Artery was ligatured twice.* By CHRISTOPHER HEATH. *Read November* 23, 1877.

T. W., aged 36, has usually enjoyed good health; has *never had syphilis.* Family history good. Has been an engine-driver for seven years. Five years ago he fell on his right foot, through which he had to lay up for a week.

Eight weeks before admission, on springing out of bed, he felt a pain in the right ham, and his leg almost gave way under him. This recurred several times, and 10 days ago he found the pulsating swelling.

State on admission, July 2, 1877.—Pulsating swelling in right ham which fills the space. Pulsation expansile, synchronous with radial pulse, and ceases on compressing femoral artery. There is a thrill and rough murmur. Constant throbbing pain at seat of tumour. No arcus senilis; arteries somewhat tortuous; heart healthy. He looks a strong, healthy man.

Treatment, July 3.—Two Carte's tourniquets applied (one in the groin and the other in the thigh) for 5 hours.

4.—Pulsation somewhat fainter. Carte's tourniquets applied for 4½ hours, then Esmarch's bandage for 2¼ hours—chloroform being given for the last hour and quarter—and after this the tourniquets for 4 hours.

5.—Pulsation strong. Carte applied for 5hrs. 50m.

6.—Esmarch's bandage 2¼ hours under chloroform; then Carte for 2 hours.

8.—Leg strongly flexed for 7 hours.

10.—Leg bandaged up to knee and flexed for 13½ hours.

12.—Ditto, for 18½ hours.

13.—Ditto, for 21½ hours.

16.—Carte's tourniquets for 12¼ hours.

17.—Carte's tourniquets for 13½ hours.

26.—The pulsation varied in intensity during the previous treatment, but is now quite strong.

Mr. Heath ligatured femoral artery with catgut ligature at the apex of Scarpa's triangle: operation performed antiseptically. Pulsation completely stopped in aneurysm. Slight pulsation was noticed 19 hours after application of ligature. Foot feels benumbed.

August 1.—Pulsation fainter.

9.—Pulsation ceased after lasting for 14 days.

15.—Patient allowed to get up; 21st day after ligature.

20.—Pulsation recurs, having been absent for 11 days.

24.—Pulsation distinct through whole length of femoral artery, 29 days after ligature.

29.—Leg flexed for 3 hours, and then for 1½ hours, Carte's tourniquets also being applied.

30.—Tourniquets applied for 13½ hours.

31.—Ditto, for 24 hours.

September 2.—Tourniquets applied for 18 hours.

11.—*Pulsation stronger.* Tourniquets applied for 12 hours.

19.—Pulsation stronger and more expansile.

Mr. Heath ligatured femoral artery in Hunter's canal with whipcord: operation not performed antiseptically.

20.—Slight pulsation returned.

26.—Pulsation ceased, having lasted seven days.

October 1.—Free suppuration. Temp. 102·2°.

12.—Ligature came away on 24th day after operation.

20.—Patient discharged well; no pulsation in aneurysm (which is very small). No *abnormal* pulsation nor tumour at seat of first ligation. No pulsation in tibial arteries.

Résumé.—In the treatment of the case *Carte's tourniquets* were applied for 102½ hours. *Esmarch's bandage* for 4½ hours. *Leg flexed forcibly* for 65 hours. Femoral artery ligatured *twice.*

After 1st ligature.—Pulsation returned after 19 hours, lasted 14 days, then was absent for 11. Pulsation felt at seat of ligature on 29th day after its application.

After 2nd ligature.—Slight pulsation returned next day, and, becoming weaker, ceased in seven days.

First operation performed antiseptically; highest temp. 99·6°; slight suppuration; wound rapidly healed; comparatively little pain.

Second operation not done antiseptically; highest temp. 102·2°. Very free suppuration; great pain; but the patient had been lowered by previous treatment and stay in Hospital, and tissues at seat of 2nd ligature had become somewhat thickened by the long compression.

(*From Notes by A. J. Pepper, Surgical Registrar.*)

The foregoing was a case of small, and, probably, more or less tubular aneurysm of the popliteal, and hence I believe the failure of the compression treatment, of which all varieties were fairly tried.

The catgut was undoubtedly applied to the femoral

artery, and was tied sufficiently tightly to entirely obstruct the vessel, but not, apparently, to divide the arterial coats. It is noteworthy that, after the application of this ligature, the pulsation in the aneurysm should have been absent for 11 days, and yet have subsequently returned, when the femoral artery again became pervious.

I elected to apply the second (hempen) ligature below the sartorius, in order to avoid the possible risk of the artery having been weakened above, and found no special difficulty in the proceeding.

XII.—*A Case of Popliteal Aneurysm treated by Ligature of the Superficial Femoral Artery with Carbolized Gut, followed by the formation of an Aneurysm at the seat of Ligature.* By THOMAS SMITH. *Read November* 23, 1877.

T. C., æt. 43, was admitted into St. Bartholomew's under my care, February 14, 1876. He was a stevedore by occupation, and was a powerful, and apparently a healthy man.

Two months before admission he first noticed an aching at the back of the knee, which afterwards spread to the foot, and up into the thigh; a week before admission he noticed a swelling in the right ham.

On admission.—There was a popliteal aneurysm on the right side, as large as one's fist, with a very forcible impulse and a loud bruit, controlled by pressure on the femoral, but one could not empty the sac.

February 28.—Digital compression on the superficial femoral was commenced at 9 a.m., and continued till midnight.

29.—At 9 a.m. pressure was resumed, and continued until 11 a.m., when it was discontinued, on account of the severe pain it occasioned.

March 1.—The attempt to compress the vessel was altogether abandoned, on account of the local pain, and the constitutional disturbance it occasioned.

11.—I tied the superficial femoral with carbolized catgut, adopting antiseptic precautions; the catgut was kindly sent to me by Mr. Lister.

13.—Forty-eight hours after the operation, pulsation

was felt in the aneurysm: the limb was kept carefully bandaged, and the antiseptic dressing was continued. The wound rapidly healed without suppuration or constitutional irritation.

On March 27, the patient discharged himself, there being still a feeble pulsation in the sac.

A month later he presented himself with his aneurysm pulsating as at first, the femoral also at the seat of ligature pulsated; just above this point the artery could not be felt.

The patient stated that three weeks after his return home he exerted himself more than usual, and that after this time the pulsation returned in full force. As he refused to come into the Hospital, he was supplied with an elastic stocking, fitting closely to the whole limb. In six months' time he appeared again at the Hospital (on October 1, 1876), and stated that his aneurysm had been increasing in size throughout the summer, and that three months since he noticed a throbbing at the site of ligature, just beneath the scar of the operation wound.

The patient was in robust health, the cicatrix was firm; just beneath its upper end was an aneurysm, the size of a walnut, pulsating very forcibly, having a well-marked thrill, and a loud, rasping bruit. The original aneurysm had increased in size, and the leg and foot were œdematous.

After a few days' rest in bed, during which time the condition of the aneurysms improved, Esmarch's bandage was applied during 50 minutes, and the pressure was maintained for an hour and a half afterwards by means of a tourniquet on the femoral. This attempt caused great local pain, and no little constitutional disturbance, and was followed by no improvement in the condition of the aneurysms.

October 31, 1876.—The superficial femoral was tied about 1½ inches below the upper aneurysm, a moderately thick carbolized silk ligature being used; both ends of the ligature were cut off; the operation was performed, and the wound was treated under the antiseptic method. Pulsation in the lower aneurysm at once ceased, and never returned; recovery was very rapid; there was no local disturbance, nor any constitutional irritation.

As regards the upper aneurysm, it was noted that the pulsation in it gradually diminished in force, and at the end of five days from the operation it was smaller in size, and the pulsation in it was with difficulty detected. A few days later

this aneurysm had almost regained its original condition. The patient left the Hospital, wearing a laced stocking on the limb, five weeks after the operation.

Remarks.—Though carbolized catgut is undoubtedly an excellent material for the ligature of divided arteries, both large and small, as they present themselves in operation wounds, yet it is at present doubtful how far it is trustworthy as a ligature to the trunks of vessels in their continuity for the cure of aneurysm.

Until the occurrence of the case above related, I had every reason, from my personal experience, to speak well of this form of ligature in the treatment of aneurysm; yet I was cognisant of untoward results in the practice of others which I was disposed to attribute to some defect in the preparation of the catgut employed.

The very ligature used on this occasion was supplied to me by the kindness of Mr. Lister, and as far as external appearance went, it was all that could be desired.

It failed, however, to constrict the artery for more than 48 hours, though, from the subsequent occurrence of aneurysm at its site, one may presume that it divided the internal and middle coats of the vessel. It may be said that in this case the fault lay not in the ligature, but in the manner of its application, and this is quite possible; though it is somewhat strange, if this view be correct, that I have never before met with secondary hæmorrhage at the seat of ligature, a return of pulsation (which has persisted) in the aneurysm, or the formation of a fresh aneurysm, though I have followed precisely the same method in applying the ligature to the subclavian, the external iliac, the femoral, and the brachial, and to other smaller vessels.

On the other hand, we now possess abundant evidence to prove that carbolized catgut, as a material for the ligature of large arteries in their continuity, cannot yet be regarded as thoroughly trustworthy. In proof of this statement I would refer to Mr. G. Y. Heath's paper in the *Lancet**, where will be found a record of some of the differences that have been bserved in the behaviour of carbolized catgut when applied to large vessels in their continuity.

In three days after its application it has been found softened and partially absorbed.

Fifteen days after ligature of the subclavian, the catgut has been found *in situ* and unabsorbed, while there was a

* 'Lancet,' 1877, vol. i., page 417.

hole in the vessel, from which secondary hæmorrhage had taken place.

In the same patient, at the same time, the same kind of ligature was applied to the carotid, and this vessel was found closed by clots, the ligature had disappeared, and the external coat of the vessel was uninjured.

In three of Mr. Bryant's four cases recently brought before this Society, the vessel was found completely, and in one case partially, divided. In contrast to these, Mr. James Lane relates a case in last week's *British Medical Journal*, where, 32 days after ligature of the external iliac, the external coat of the vessel remained entire. And another case, where the femoral artery was found undivided 28 days after the application of a ligature.

I think, then, that we are justified in assuming that carbolized catgut, as at present supplied to us, varies somewhat in its effects on the arterial coats, and in its solubility in the tissues of the living body.

It has so many advantages that one cannot but hope that ere long some improvement in the method of its preparation may be discovered which, without destroying altogether its solubility or capacity for being absorbed, or, as some think, organised, will enable it with certainty to constrict an artery for such a time as may be sufficient for clotting to take place within the vessel.

As far as I am aware there has been no previous record of the occurrence of aneurysm at the seat of ligature, when carbolized catgut has been employed. And in estimating the possibility of this result, it must be borne in mind that the patient in this instance left the Hospital contrary to advice only 16 days after the application of the ligature, and that it is almost certain that he used the limb so freely as to do all in his power to contribute to the result which is here recorded.

XIII.—*A Case of Acute Suppurative Synovitis, Evacuation of the Pus, with Antiseptic Precautions. Recovery.* By Osborne D. Marriott, M.B. *Communicated by* Rickman J. Godlee. *Read November* 23, 1877.

THE patient (F. Y.), aged 4 years next February, sustained an injury to the knee from a fall on July 20 last, which did not attract attention at the time. He complained of pain on the following day.

His family history would indicate a disposition to tubercular disease.

I saw him on July 22; his temperature 100°; the joint swollen and painful. The limb was placed in a McIntyre splint. All symptoms increased in severity, and on August 7 the joint measured 10½ inches in circumference. A very small puncture was then made, which allowed an ounce or so of serum to escape. Oozing stopped the same evening, and the small wound healed.

This gave but temporary relief, for pain returned, the joint became more swollen, measuring 11 inches in circumference, his temperature 102°, and on the 11th he had a rigor. On the 12th, with the assistance of my partner, Dr. Alliott, I punctured the joint under the carbolic spray, carrying out as concisely as I could the directions of Professor Lister, and about an ounce and a half of pus was evacuated, and a very small drainage tube inserted, and the limb was placed as before in the splint. Freedom from pain followed, and the little fellow slept well. On the following morning his temperature had fallen to 100°. No interference with the wound was considered necessary until the 15th, when the dressing was changed under the spray—but very slight discharge, and the drainage tube removed. On the 19th dressed again—scarcely a drop of discharge; left till the 25th, when the wound was found healed.

The subsequent treatment merely consisted in keeping the limb bound up in carbolized gauze, to guard against the chance of any reopening of the wound, and confined to the iron splint. Passive movement was commenced about September 10, and on the 14th he walked with the splint on. This was gradually discarded some days for an hour or so a day, until the 27th, when it was finally discontinued.

The recovery is complete, and the measurements of the two joints are alike. For my own part I regard the success as due to strict attention to antiseptic precautions, holding in view the small percentage of complete recovery in such cases. I beg to submit this statement to your Society for consideration.

XIV.—*A Case of Convulsions treated by Venesection.* By W. H. Broadbent, M.D. *Read December* 14, 1877.

On Wednesday, July 25, a gentleman came to my consulting-room saying that on the previous Monday morning

he had had an apopletic attack. All that he knew about it was that, on coming to himself, at about 6 A.M., he found the house had been roused, and a medical friend, Dr. Gaven, sent for, and his wife and her sister were in a state of alarm. He pointed out a general discolouration on the forehead and chest, which was found to be due to innumerable minute capillary extravasations, and I inferred, what turned out to be the case on inquiry from his wife later, that there had been convulsions. He said he had had a little headache after the attack, but that he then felt perfectly well, and he laughed at the serious view taken of the case. While he was talking with me I observed several momentary suspensions of consciousness, during which he lost the thread of his conversation, or ceased to hear what I was saying.

I had seen the patient before, and knew the main facts of his medical history. He was about 42 years of age, inclined to be stout, and slightly florid. He was of an excitable disposition, and intellectual in his pursuits. He had spent much time abroad; had lived freely and heedlessly, but had not been given to excesses; had had syphilis when young; had taken much mercury and iodide of potassium, and the last manifestation, which had been rupial ulceration, of which he bore many scars, had taken place 18 years before.

Exactly 12 months before, he had had a carriage accident, in which he received a very severe concussion of the brain, and was supposed to have sustained fracture of the base of the skull. He had been unfit for professional work for 3 months, and on his return to it did very little for some time, and was extremely careful in the matter of diet and drink. Little by little he had increased his work and thrown off the restraints imposed upon him, and had resumed his old convivial habits. He acknowledged that he was more irritable than before the fall, but considered that no other ill effect remained, except that he had lost the senses of smell and taste.

After hearing the patient's account of the attack, and making the observations mentioned, I sent him home, ordering him aperient pills and small doses of bichloride of mercury.

Next morning I was called to him, and reached his bedside between 7 and 7.30 a.m. I found there Dr. Gaven, and learnt that our patient had had a succession of violent convulsions from about 3 a.m., at intervals of about 15 minutes, and had been unconscious the whole of that time.

He was lying on his back unconscious, tossing restlessly, throwing about his arms, and groaning loudly. The face was

expressive of suffering, the eyes closed and held firmly shut when the attempt was made to open them—the pupils equal and of moderate size. It was noticed that the left arm was moved less than the right, but on careful watching it was apparent that the reason for this was some injury to the muscles about the shoulder-joint, and there was no evidence of hemiplegia or paralysis of any kind. The heart was beating violently, but the sounds were normal. The pulse was rather small and weak, but long.

When an attack of convulsions was coming on the groaning ceased, and the limbs were at rest. The eyes were then opened widely, their look, and the expression of the face being for a moment almost natural, but the pupils quickly dilated, the cornea was turned up under the eyelid, the face became distorted, and there came a long and fearful groan, or almost scream, at the end of which the entire body and all the limbs were convulsed with violent synchronous jerks. The face became livid, the pulse imperceptible, and the heart-beat weak, and it seemed as if life were extinct. This would, I think, really have been the case had it not been for Dr. Gaven, who at the critical moment of each attack got a spoon between the teeth, depressed the tongue, and started respiration artificially by pressure on the chest till the respiratory movements began to be re-established.

While we were discussing and deciding upon the line of treatment two attacks occurred, notwithstanding administration of chloroform. Mustard poultices had already been applied to the calves and to the nucha. A dose of calomel was placed on the tongue. An enema was ordered, and then bromide of ammonium, or potassium, with chloral, was to be injected into the rectum. Any effects to be hoped for from these measures, however, would require time, and every hour was full of peril. We consequently decided to bleed the patient. This was done by Dr. Gaven to at least 30 ounces. The pulse did not falter during the flow of blood, but became larger and softer. There was no other apparent effect at the moment.

Another convulsion came on—the third I witnessed—almost before the bandage could be adjusted. It was as violent as any of the others, but it was the last. The convulsions from this time ceased entirely.

In the afternoon the patient had regained consciousness, but could not speak. Next day he talked very well, but his ideas were rather scattered. In another day or two his in-

tellect was quite clear, and except that he felt very stiff everywhere, and had pain in the left shoulder, to the muscles of which some injury had evidently been done by the convulsion, he declared himself to be quite well. Bromide of potassium was given, and Dr. Gaven carefully watched the progress of the case. For some time there was much jerking of the limbs during sleep, and once or twice some apprehension was excited by pain in the head, or excitement of manner, but there was gradual improvement, and very soon the patient was able to do a little work. Up to the present time (December 14) he remains quite well, but still has difficulty in raising the left hand to the head, and in putting on his coat. Iodide and bromide of potassium were taken for some time; later small doses of bichloride of mercury.*

Remarks.—It can scarcely be looked upon as a mere coincidence that the convulsions ceased after the bleeding.

The considerations which led us to resort to venesection were, firstly and chiefly, that the patient's life was obviously endangered by each attack, and that at his age protracted and violent convulsions, if not immediately fatal, are liable to affect the brain injuriously, and are far more serious in their effects than at an earlier period of life. Compared with this risk the loss of blood was a trifle, and it seemed probable that it might make a favourable impression on the condition which produced the convulsions. What this condition exactly was could not be determined, but it was probably some abnormal state of the cerebral circulation, and therefore capable of modification by bleeding. Causes of this, both local and general, were traceable. The injury to the brain twelve months before had been of a serious character, and had been considered to affect chiefly the base. Thickening of the membranes had probably been left as a consequence, and this might obstruct the circulation of blood through the vessels here, or interfere with the due interchange between cerebro-spinal fluid and blood. The patient's general condition moreover was one of plethora, which, together with the free living which had led to it, was dangerous so soon after an injury to the head. The pulse again was very similar to that observed in cases of uræmic convulsions; the artery was contracted, and remained full between the beats. The pulse, however, was weak and small, probably because the heart was acting feebly in consequence of the protracted convulsions. The similarity of the state of the circulation

* Remains perfectly well, July 1878.

with that observed in uræmic convulsions, and the good effect of bleeding in uræmia, led us to expect benefit in this case.

The amount of blood taken was rather large—30 ounces. We had decided before hand on 20 ounces, but as there was no indication of approaching syncope, and the pulse became larger and softer, we went beyond this amount, which we did with less hesitation as the patient was plethoric. In my own experience I have never seen reason to regret that I had recommended bleeding, or that too much blood had been taken, while I have more than once regretted that venesection had not been practised, or had been put off too long, or that the flow of blood had been too soon stopped.

In this case the patient has not been the worse for the loss of blood, but probably better, even putting out of sight the immediate effect on the convulsions.

XV.—*Two Cases of true Subcutaneous Operation for Exostosis.* By C. F. Maunder. *Read December* 14, 1877.

Case I.—Exostosis of the Femur.

HARRIET S., aged 15, was admitted into the London Hospital on June 23, 1874. She had for many months suffered pain and discomfort at the back of the left knee, and was unable to extend the leg fully upon the thigh. When walking she could only get her toes to the ground. On examination a bulging of the thigh just above the external condyle could be seen, and on further investigation this proved to be caused by a pedunculated exostosis attached to the back of the femur at its outer side, just at the junction of the epiphysis with the shaft. The body of the tumour seemed to press against the tendon of the biceps muscle, and the external popliteal nerve. To relieve pain and enable her to walk it was necessary either to remove or dislodge the growth. Three methods of treatment occurred to me: either abscission through an open wound—a formidable proceeding, requiring a deep cut and the exposure of bone-cells, with its possible dangers, such as free suppuration, osteomyelitis, &c.; subcutaneous division of the pedicle either with the saw or chisel; or fracture of the pedicle by violence without any wound whatever. Supposing that I could succeed by this last method in detaching the tumour I was

prepared either for its becoming necrosed, and ultimately extruded by suppuration, or for its absorption, or for its reunion. If suppuration occurred I argued that it would not do so until the bone-cells of the femur, opened by the fracture, had become closed-in, and thus protected from danger. If absorption occurred there would be no further trouble, and if reunion took place the body of the tumour might have so changed its position as to no longer interfere with the patient's comfort. I determined to try subcutaneous fracture.

Operation, July 8, 1874.—The skin being protected by a piece of chamois leather I seized the tumour with a pair of gasfitter's pliers, and having secured a firm hold of it, I gave it a sudden jerk, and the pedicle broke. Ice was applied for two or three days, and a little tenderness, swelling, and ecchymosis were the only consequences of the operation.

The house surgeon, Mr. Mitcheson, and myself resorted to passive movements, yet notwithstanding these, reunion occurred, but the body of the tumour occupied a new position in the popliteal space, and troubled its owner no longer.

Case II.—Exostosis of the Tibia.

Mary Ann C., 14 years of age, was admitted into the London Hospital in February 1877.

She states that about two years ago she slipped and sprained her right knee. This accident was followed by pain and swelling, and she could only get about on her toes. Since that time the case has been treated during a period of three months with iodine paint, but without avail. On examination I found her to be the subject of a rather large pedunculated exostosis attached to the inner edge of the tibia, just below the internal tuberosity. This also I treated by subcutaneous fracture with the gasfitter's pliers, but with a result different from that obtained in the first case. The pain and inability to walk have been removed, but the tumour has not reunited with the shaft of the bone, and its mobility is readily recognised.

Thus, the object of the operation was attained without any external wound; a fact upon the desirability of which it is unnecessary to dwell.

Both patients are here, and will be found to be free from every impediment to active progression.

XVI.—*A Case of Lupus of the Face, treated by Linear Scarification, aided by Erasion.* By BALMANNO SQUIRE, M.B. *Read January* 11, 1878.

SARAH G., aged 32, single, a needle-machine-worker, has been affected with lupus of the face since the age of 14. The disease appeared first on the nose, and remained restricted to this part, until three years ago, when it appeared on the right cheek also, occupying here a distinct position, quite isolated from the patch on the nose.

Her present condition (in September 1877) is that the lower third of her nose has disappeared, and become replaced by a thick scab covering an ulcer, the floor of which consists of pale, flabby granulations, exuding a thin, purulent discharge. The patch of disease on the right cheek measures 2 inches vertically by 1½ in. horizontally. It consists of unbroken lupus-tubercles, and presents no scabs or ulcerations.

The patient was admitted as an in-patient of the British Hospital for Diseases of the Skin, on September 26, 1877.

I at once operated on the whole of the diseased area, both of the cheek and of the nose, by scraping away the friable portion of the diseased skin by means of a small steel spoon, provided with sharp edges, after the manner originally advocated by Volckmann, of Halle; and as soon as the surface had healed, I again, after about a fortnight's interval, repeated the operation over portions of the original patch which seemed still to require it. On the surface healing for the second time a very considerable improvement was noticeable. In fact the cure of the disease was evidently for the greater part already accomplished. There remained still various portions of skin, which, although not sufficiently diseased to permit of their being scraped off by means of the spoon, were nevertheless evidently affected in an obvious degree with lupus-infiltration. These accordingly were treated by means of linear scarification, repeated at short intervals several times over the same area. The ulcers of the interior of the nostrils have been treated in the same manner, namely, by operating through a nasal speculum.

The patient has not on any of the occasions of my operating on her availed herself of anæsthesia, either general or local, but has borne the process almost without flinching. She is now, as I believe, quite cured of her disease.

The period between the date at which the disease has

now long since seemed to be cured and the present time has been occupied by my watching to see if any return of the disease would take place, and by my eradicating, by means of erasion with the sharp spoon or by scarification with the scalpel, any minute traces of the disease, which, after due watching, seemed to be still left unobliterated. My deviations from the course of my predecessors in this method consisted in the use of much smaller spoons, for the purpose of attaining greater accuracy in manipulation, an important point when it is requisite to eradicate even the smallest possible remains of the disease; and for the other matter in employing linear scarification, in place of the hitherto used and so-called multiple punctiform scarification; equally also for the purpose of attaining greater uniform precision in the treatment.

XVII.—*A Case of Chorea complicated with Epilepsy in the Adult Male.* By JULIUS ALTHAUS, M.D. *Read January* 11, 1878.

M. N., a single gentleman, of no regular occupation, who had been educated at Harrow and King's College, was 28 years of age when he first came under my care, in February 1866. His parents, both of whom were dead, had been first cousins. The father had died of softening of the brain, and the mother of insanity, at a comparatively early age. Many other relations on both sides had suffered from various forms of brain-disease. Besides, however, having inherited the neurotic constitution in a peculiarly severe form, the patient had been, early in life, subject to the strumous dyscrasia, and suffered for many years from scrofulous inflammation of the eyes. At Harrow he became addicted to masturbation, and continued this habit until 21 years of age.

There was no history of fright, rheumatism, or endocarditis; but when 15 years old, and at school, the patient began to be very nervous, which showed itself more particularly in his stumbling at very slight obstacles, walking clumsily, and finding great difficulty in going downstairs without support. On one such occasion he fell down a whole flight of steps. The chorea gradually spread from the lower to the upper extremities, and ultimately the entire body became afflicted by the disorder. It was particularly marked in the muscles of the lower jaw. There were, however, considerable variations in the degree of the choreic movements,

which were less intense when the patient was quiet and alone, while when he was excited, more especially at games, such as bowling at cricket, he would suddenly fall down, without, however, becoming insensible.

When 21 years of age he had a severe attack of smallpox, which greatly prostrated him. This was in 1859. The summer of that year was unusually hot; and one afternoon, when he had been walking on the high road in the neighbourhood of Plymouth, he fell down several times, and was seized by convulsions while on the ground. These continued for a considerable time, and ultimately developed into a true epileptic fit, with coma. Ever since that time exposure to the sun seemed to draw the blood from the extremities, and caused great heat in the spine, with flushes in the face and head, and ultimately convulsions, which would end in a regular epileptic seizure. The patient, therefore, carefully avoided such exposure, or, if obliged to face the sun, kept the head and back of the neck wet with a large well-moistened sponge.

In the meantime the chorea continued, but no more fits took place for 18 months. The death of his father, which occurred at the end of that period, caused the patient a great deal of anxiety, and threw much business on his hands; and for the two following years he had between twenty and thirty attacks per annum. They nearly always came on on first waking in the morning. All this time he had a continual gleet, and very frequent nocturnal emissions of semen, which seemed to prostrate him very much. He first had sexual connection at 23 years of age, and contracted a soft chancre, which destroyed a large portion of the prepuce; and gonorrhœa, which resulted in a somewhat tight stricture of the urethra. The bowels having been habitually confined for some time, enemata were used, which brought away an enormous mass of impacted fæces, with great relief to all the symptoms from which he had previously suffered.

He now had no more epileptic fits in the daytime for 14 months; but then had one such, as he thought, from sleeping in a hot, close room, away from home; and another three years afterwards, in 1865, from the same cause. During sleep, however, such attacks were now tolerably frequent, and seemed to occur when he had had too little fresh air during the day, or when sleeping in a close room; after reading hard at night; when he had undergone excessive bodily fatigue, or had business to attend to, particularly when this

caused any anxiety. At such times he generally dreamt that he fell from a great height, or that he and a friend were standing on the brink of a precipice, and just in the act of going down. After a time he would wake with a feeling of sickness, and with the tongue severely bitten. There were petechiæ on the face and hands, the feet were swollen, the muscles of the extremities felt bruised, and there was great prostration and tingling in the left foot and hand. Sometimes the convulsions continued on waking, and the patient was for a time in a semi-conscious state, in which the subjects of his dreams were mingled with the ideas of waking life.

The patient had taken a great variety of medicines ever since his illness first commenced, and had found that almost every new medicine appeared to strengthen him for a few days, but then brought on all the symptoms of an approaching fit, so that he was obliged to discontinue it. He was under the impression that valerianate of zinc and mistletoe had done him most good.

On examination the patient appeared fat, and his muscles flabby. The expression of the face was good-humoured, somewhat childish, and varied from one instant to another. On recounting some disagreeable symptoms, of which he had to complain, he burst out into loud laughter. His mind seemed clear, but easily fatigued, as he answered questions with greater readiness and precision at the beginning than at the end of the interview. His temper, from having been equable, had of late become irritable; and he complained of great despondency. He now often wakes in the morning in tears, and a peal of church bells will unnerve him completely. He is in the habit of reading a great deal, being unable to use his hands for any regular work; but he has lately shirked hard reading, or argument in conversation, and has been apt to make blunders in business. He cannot play chess, or do anything which in the least excites the brain, without being the worse for it; but he has never suffered from headache or vertigo, and can drive along a steep bank, or through a deep ford without fear or dizziness, at a time when he is utterly unable to stand or to walk. His memory has at times failed a good deal, but has improved since he left off wine and spirits about a twelvemonth ago.

The muscles of the eyes, face, and jaws are in a state of choreic restlessness, and more particularly so the frontal, temporal, and masseter muscles, and those of the tongue. On this account the speech is jerky and twitching. Chorea is also

marked in the shoulders, arms, and hands, which are liable to be thrown about by irregular muscular contractions. He is apt to drop things suddenly out of his hands, has on this account great difficulty in eating, and cannot dress himself without assistance. The right and left side are about equally affected. In the lower extremities the affection is rather more severe than in the upper ones. He experiences the greatest difficulty in standing or walking alone. When sitting or lying down he seems to be at ease, but on standing bends forward, and would fall unless supported. He cannot go down stairs without taking hold of something, and is extremely nervous, even when supported. When walking in the country, and undecided which of two roads to take, he generally falls down. He can never walk steadily, but staggers like a drunken man, even when at his best; and he always falls forwards, never backwards. He complains of a feeling of numbness in both lips, and at the bottom of the back, but otherwise there is no affection of sensibility; and the nerves of special sense are in their normal state, except that there is a slight degree of deafness, which he attributed to having been sitting in a cold draught some months ago. The vaso-motor system of nerves, however, is generally in a disturbed condition, as the patient has often flushes in the face, and cold extremities.

There was no chest-disease, but the sounds of the heart were feeble and slightly indistinct. The appetite was voracious, as the patient would occasionally eat five or six large mutton chops for his early dinner; but there was no dyspepsia. The bowels were habitually confined. The urine had a specific gravity of 1030, and contained an excess of phosphates and urea, but no albumen or sugar.

A peculiar feature of the case was, that epileptic attacks could at almost any time be brought on in the day by neglecting to keep the feet warm, and by undue abstinence from food; while they could often be avoided or arrested by taking a stimulant, by keeping perfectly quiet, and fixing the attention on some one thing for a quarter of an hour or so, and by being in the open air. Nearly every departure from a very plain quiet mode of life would bring on coldness of the extremities, followed by convulsive movements of the limbs and body, flushes along the spine and head, and ultimately insensibility. The coma would last for rather more than an hour, and retching and vomiting ensued as soon as the patient recovered his consciousness.

Seeing this combination of chorea and epilepsy, I ordered the patient a mixture containing arsenic and bromide of potassium, with occasional doses of henbane for arresting convulsive seizures. This medication appeared to have no influence on his condition, although it was continued for a considerable time. I prescribed later on oxide of zinc, quinine, and bromide of ammonium, and used the continuous galvanic current to the centres of the nervous system; but this likewise remained ineffectual, and the chorea as well as the epileptic seizures seemed to increase rather than to diminish as time went on. In 1870, when hydrate of chloral had been brought under the notice of the profession by Professor O. Liebreich, I prescribed that drug with the view of diminishing the cerebral hyperæmia, which I look upon as the essential pathological feature of St. Vitus's dance. The patient found this medicine most useful, not only for checking the extreme restlessness and general convulsibility from which he then suffered, but also for arresting epileptic fits. Contrary to my advice, however, he soon got into the habit of taking it in far larger doses than I had directed him, not only for the purpose just mentioned, but also as a stimulant, whenever he felt weak and depressed. Instead of 30 grains, as prescribed for the twenty-four hours, he would in this manner take 90 or even 120 grains during that period; and he did this without consulting me again for about eighteen months, that is, until the autumn of 1871, when he came to town to see me.

I then found that the chorea had greatly subsided in the jaw, as well as in the upper and lower extremities; but that there was a change in the character of the epileptic seizures, which occurred more frequently, were more severe, and came on more suddenly, that is, without such long warnings as had previously occurred. At the same time digestion had become very much deranged; he could take no solid food, as everything was rejected as soon as taken; the tongue was covered with a black fur; the breath was most offensive; the patient complained of frequent gastric pain and constant nausea. The general physical debility had also increased, and the patient appeared more childish in his manner and conversation than before. Under these circumstances I strongly urged him to discontinue the chloral altogether, and at once; and as it seemed difficult that he should do without a sedative altogether, I prescribed tincture of sumbul, in 20 minim doses. The patient followed my advice as

long as he remained in London, with the effect that his digestion improved, the tongue became clean, and all symptoms of gastric and intestinal derangement disappeared; he also appeared stronger, and walked better than he had done before. Soon after leaving town, however, he relapsed into the habit of taking chloral, the immediate comforting effects of which he found superior to those of any other medicine.

I last saw him in February, 1874, when there was very little chorea left, but he was very feeble, and the epileptic fits had increased in severity. The patient died suddenly in October, 1874, in the country. He went to bed on a Saturday evening in very good spirits, expressing his intention of going to church next morning—an unusual exertion for him latterly. At 10 o'clock a.m. on the Sunday his servant went into his bedroom, and found him quite dead, leaning on the table by his bedside, with a wine-glass half full of chloral clasped in his hand. He had apparently gone fast asleep, and died without a struggle; and the practitioner who was called in, as well as his relatives, believed that death had occurred from an overdose of chloral. Unfortunately no post-mortem examination was obtained. Considering the symptoms which had been observed during life, I should have expected to find slight structural changes in the grey matter of the cord, the medulla oblongata and pons Varolii, the central ganglia, and the cineritious substance of the hemispheres.

Remarks.—There are several points of interest in this case to which I wish to draw attention. The patient started with bad prospects in life, since both parents had died from brain-disease at a comparatively early age; and there had, moreover, been close blood-relationship between them, so that the chances of their offspring being healthy were slight indeed. Nevertheless the patient kept tolerably well until the age of 15, when he contracted the habit of masturbation, which, in the absence of other agents, must be looked upon as the exciting cause of the chorea. The patient himself was firmly convinced of this; and the circumstance that the first symptoms of chorea commenced at a much later period of life than is usually the case, lends additional weight to this view. In by far the largest majority of cases chorea breaks out between 5 and 10 years of age; after 10 there is a sudden fall, and at and after 15 the cases become very rare, more particularly in males. The manner in which chorea subsequently proceeded into epilepsy is also uncommon.

It is true that a kind of sunstroke which the patient had in 1859 appeared to be the exciting cause of the epilepsy, but the succession of phenomena was very different from what is generally observed in cases of sunstroke. Of that disease, we may distinguish two forms, viz., the cardiac and the apoplectic variety. The cardiac variety, in which we assume sudden paralysis of the cardiac centre in the medulla oblongata, is generally quickly fatal from syncope. In the apoplectic form, where the vaso-motor centre in the medulla is affected, the first symptoms are delusions, hallucinations, and maniacal excitement, which is followed by depression and the condition of apoplexy. None of these symptoms, however, occurred in the present case, in which the choreic movements simply became intensified, and were transformed into convulsions, which were ultimately followed by coma. These convulsions had, therefore, to be looked upon as a *motor aura epileptica*, which was particularly distinguished by its long duration. In the further progress of the disease, this aura lasted sometimes for three or four days consecutively; but later on its duration was much shortened. The transition of chorea into epilepsy appears singular, as we associate the former with hyperæmia, and the latter with anæmia of certain portions of the nervous centres; and it is shown by the present case that even where hyperæmia of the central ganglia is habitual, this does not exclude intercurrent attacks of active cerebral anæmia.

I do not agree with the opinion which was expressed after the death of the patient, that an overdose of chloral had killed him. If such were a correct view of the case, he would not have been found clenching a glass half full of liquid for some hours after death; for if chloral had killed him, there would have been complete muscular relaxation. It seems to me more reasonable to assume that the patient awoke some time in the morning and felt the symptoms of a fit coming on; that in order to arrest this, he endeavoured to take chloral; that the convulsions becoming suddenly intensified, he was unable to take the mixture; that he died in the fit; and that rigor mortis setting in immediately after death, caused the glass to remain clenched in the hand of the patient until the servant entered the room.

The power of hydrate of chloral in controlling chorea is put into a strong light by the present case. The affection had lasted nearly eighteen years, viz., from 15 to 33 years of age, when the patient began to take this medicine, and had

at no time shown any signs of abatement. Zinc, arsenic, bromide of potassium, and other medicines which are believed to have a specific influence on this disorder, had been taken perseveringly, but without producing the slightest effect. The general experience of the best observers is that, when chorea has lasted well up into mature age, in the male, it is never cured; while in this case it improved immediately on the exhibition of the chloral, and had nearly disappeared when I saw the patient last. The action of this medicine in St. Vitus's dance is easily understood. Chorea being caused by active hyperæmia of the corpora striata, and of the territory of the sylvian arteries generally, is only possible as long as this hyperæmia persists. In sleep, when the brain is comparatively anæmic, the choreic movements cease altogether, except in cases of unusual severity, where the hyperæmia is excessive, and therefore not so thoroughly relieved as in ordinary cases. Chloral acts as a hypnotic by causing cerebral anæmia, and is therefore a direct antidote in relieving the opposite condition of the brain.

A final question, of great practical importance, is forced on the mind by this case, viz., whether the custom obtaining in this country that patients may, at their own discretion, and for years, procure from dispensing chemists any amount of a powerful medicine, for which only a single prescription has been given, is a proper one. This custom, which has recently grown to excessive dimensions in England, renders it impossible for the physician to regulate the dose which he wishes to be taken, and likewise opens the door to crime. Opium-eating and chloral-drinking may thus be readily induced, and a medicine which was intended to benefit becomes a curse to the patient. Again, secret poisoning, which remains undetected and unpunished, would appear to be by no means uncommon in this country, where the provisions of the Sale of Poisons Act are rendered to a great extent nugatory by the unlimited use which may be made of a formula, not only by the patient to whom it was originally given, but also by his friends, for whom, as is well known, the chemist frequently copies a prescription. Thus the would-be poisoner may go with a receipt for a small quantity of laudanum to twenty different chemists, put the supplies received together, and give the dose to his intended victim. That this is no mere fancy picture will be readily conceded by men of large experience in the profession.

Legislation on this subject exists, as far as I have been

able to ascertain, only in Germany and Austria. In Prussia, as long ago as 1801, a law was enacted requiring that all prescriptions written by either physicians or surgeons, and containing drastic purgatives, emetics, remedies used for bringing on menstruation and increasing urinary secretion, opiates, and similar powerful drugs, shall, after having once been made up, not be prepared a second time without the knowledge and approval of the prescriber, inasmuch as such means may have been beneficial at the time they were ordered, while they might cause the death of a person at another time. As some inconvenience has arisen from too frequent applications to the prescriber for renewal, it has become of late years the custom in Germany to add the word '*reiteratur*' at once, or the words '*bis*,' '*ter*,' &c., if the prescriber sees fit to do so. Unless this appear on the prescription, no good chemist will renew an old formula; and if he did, he would be punishable.

In the Austrian Pharmacopœia, the narcotics, ergotine, and other powerful drugs, are marked with a cross, and the chemist is legally bound to give no more than one supply for a prescription containing any such drugs. Some physicians add at once the word '*repetatur*,' or '*bis*,' '*ter*,' &c. Opium-eaters endeavour in all possible ways to circumvent this law; but the chemist who supplies them to excess lays himself open to an action at common law, and where real harm has been done, even to criminal proceedings.

A similar law appears to me most desirable for this country, where poisons are far too readily obtainable by the general public. I think it the duty of the State to carry out the principle of the Sale of Poisons Act, not simply in the letter, but in the spirit; and to this end a legal check must be placed upon the indiscriminate use of prescriptions containing powerful poisons. This question is one which must have often suggested itself to members of the Profession, and one on which a corporate body, such as the Royal College of Physicians, or the General Medical Council, might with propriety, and with benefit to the community, call for the action of Parliament.

XVIII.—*A Case in which severe Hæmorrhage, following the operation for Cleft Palate, was stopped by plugging the Posterior Palatine Canal.* By HOWARD MARSH. *Read January* 11, 1878.

JOHN P., on whom I had been asked to operate for cleft palate, by Mr. Pugin Thornton, was admitted into St. Bartholomew's Hospital, on October 17 last.

The fissure was of moderate width, and extended through the soft, and the posterior half of the hard palate. The patient was 23 years old, tall, and strongly built, and in good general health.

On October 20 I performed the following operation:—Chloroform having been given, and the mouth opened with Mr. Smith's gag, the margins of the cleft were pared, and the posterior two-thirds of the soft palate and the uvula (there being no tension on these parts) were brought together. Further forward, it was necessary to detach the soft parts from the bone. To do this, small punctures were made at A A, in fig. 1, and a narrow raspatory, blunt at the tip and edges, was introduced at these points, and made, after forcing its way between the soft structures and the bone, to emerge at the borders of the cleft. Then a strong aneurysm needle was passed into the tracks thus formed, and used to strip off the soft parts to a sufficient extent at the sides and anterior extremity of the cleft, and the strong attachment of the soft palate to the posterior margin of the hard was divided on either side, to the extent of about half an inch, with curved scissors passed behind the palate, and made to cut from the middle line outwards. The soft parts thus detached were easily brought together. Lastly, to prevent tension on the sutures, lateral cuts were made, about ¾ inch long, through the palate, as shown in the diagram at C C. The hæmorrhage produced by the different stages of this operation was free; but not unusually so, and had ceased before the patient was sent to bed. About three hours afterwards, there was bleeding to the extent of about half an ounce from the left nostril; but it was easily stopped by syringing the upper surface of the palate, through the nose, with iced water. For the next few days the case went on well, and by the 24th the palate had healed, and the patient was allowed to be up. On 26th, at 5 p.m., though he had been ordered to take only liquids, he ate some shrimps and bread and butter, which one of the

other patients had given him; and hearing the ward nurse coming while he was enjoying this sly meal, he bolted a large crust. Directly afterwards he felt blood dripping quickly from his left nostril, and trickling down his throat. Chancing to be close at hand, I syringed the palate through the nose with iced water, and the hæmorrhage ceased. But at 7.30 I was called to the Hospital by Mr. Schofield, the house surgeon, who sent word that bleeding had been going on for nearly an hour, and that he could not stop it. On reaching the ward at 8 o'clock, I found the patient sitting up in bed, pale and faint, and still bleeding in quick drops from the left nostril, and frequently spitting blood from his mouth; and just as I arrived, he vomited about a pint of blood from the stomach.

Calling to mind the vessels supplied to the palate, there seemed no doubt the hæmorrhage was from the posterior or descending palatine branch of the internal maxillary artery, which runs with the large posterior palatine nerve down the palatine canal, and whose distribution is indicated in fig. 2.

Fig. 1.

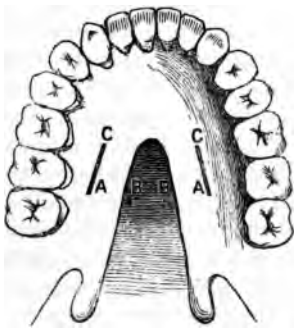
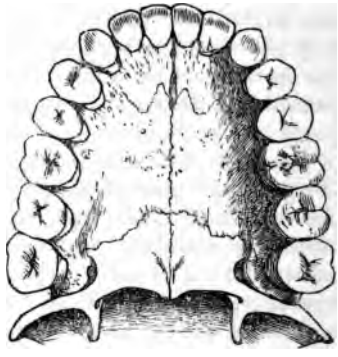


Fig. 2.



Now, about five years ago, there was in St. Bartholomew's Hospital a case of hæmorrhage after an operation for cleft palate in a young woman, in which the bleeding continued to burst out from time to time, in spite of various means used to prevent it, till the patient was reduced to a condition of most dangerous prostration. At length Mr. Smith suggested plugging of the posterior palatine canal. Acting for Mr. Savory, who was absent at the time, Mr. Willett performed this operation in the following manner:—The patient's mouth being kept widely open, he searched for the orifice of the canal, through the lateral cut in the palate,

with the point of a grooved needle, a little internal to the wisdom tooth, and having found it—in which he had no difficulty—he pressed a small wooden peg, about as big as a common match, and sharpened at its end, into the canal. The bleeding immediately ceased, and never returned. The plug remained in the canal some days (I cannot state the precise time) and then fell out. The parts soon completely healed, and the patient left the Hospital cured.

Remembering this case, I determined to follow Mr. Smith's suggestion, which Mr. Willett had found so successful. Searching with a sharp-pointed probe, passed through the lateral cut, about ⅓ inch in front of the hamular process of the sphenoid—which can be easily felt through the soft palate—and about the same distance directly inwards from the wisdom tooth, I felt, after two or three attempts, that I had fixed the probe in the orifice of the canal, and at the same time the patient screamed with pain, when the large posterior palatine nerve was crushed. A wooden plug, made by sharpening a piece of firewood, was then pressed firmly into the canal, by holding it in a pair of strong forceps with its point looking upwards and a little backwards in relation to the roof of the mouth. Directly the plug was introduced the bleeding ceased. From this date all went on well till the 29th, when the plug slipped out, and bleeding again commenced. It stopped, however, as soon as Mr. Schofield replaced the plug, the patient not having lost more than half an ounce. On November 1 the peg again slipped out, but no bleeding followed. On 2nd I carefully examined the palate. The cleft was completely healed, except at the posterior fifth of the uvula, where one suture, passed through its tip, had given way. The patient's troubles now seemed to be over. It proved, however, that this was by no means the case, for at 2 o'clock on the morning of November 3rd, fourteen days after the operation, five days after the last hæmorrhage, and fifty hours after the plug had slipped out, he was awoke from a sound sleep by feeling that blood was trickling from his nose and into his throat. Mr. Schofield was at once called to see him. Blood was still dropping fast from his nostril, and a few minutes later he vomited about half a pint. When the palate was syringed with iced water the hæmorrhage almost ceased, but in a short time it returned again. Mr. Schofield now tried to replace the peg, but the bleeding still persisted. The nostril was then plugged with lint soaked in the perchloride of iron, and a strip was pressed into the orifice of the palatine canal,

through the lateral cut. But all these means failed. I was therefore sent for at 7.30. I found the patient blanched, and so exhausted that he could scarcely raise himself in bed; and while I was examining his palate he vomited fully three-quarters of a pint of blood, and fell back in a state of profound syncope. In a few minutes, when he had recovered from the fainting, he was placed under the influence of chloroform, and then, when his mouth was held open with a gag, I could distinctly see that blood was flowing from the palatine canal. A probe passed into this canal was felt to be tightly fixed, and it completely controlled the hæmorrhage. I now introduced a plug, and pressed it firmly into the canal, and not a drop more blood escaped. From this date the patient gradually regained his strength, and in three or four days appeared well, though still very pale and weak. The plug remained in place for 17 days, and then, having become gradually loose, it slipped out. No further trouble ensued, and the patient soon after left the Hospital.

Remarks.—This case seems to present some features of considerable clinical importance. The operation for cleft palate not seldom fails, and it sometimes does little to improve the patient's articulation, and on these grounds it is apt to be disappointing; but it is not considered to involve any serious risk. Yet the present example shows that it may be followed, however rarely, by hæmorrhage of a very dangerous kind; and I know of two other cases, the one already mentioned which Mr. Willett treated, and one besides, in which the same serious complication was met with. There is conclusive evidence that the bleeding was from the left posterior palatine artery; for it was seen to come from the canal in which this vessel runs, and it ceased on three separate occasions as soon as this canal was plugged. Besides, there is no artery in the palate except the posterior palatine from which so large a bleeding could be derived.

The circumstances under which the hæmorrhage occurred seem worthy of a careful note.

Young and robust adults always bleed freely during the operation. This patient did so, but not to any exceptional amount. The bleeding noticed three hours afterwards was enough to suggest that something was wrong. Yet, as no hæmorrhage occurred till five days later, the danger appeared to have passed by. But on the 6th day, when the palate had firmly united, severe hæmorrhage set in. The probability is that the artery was divided or pricked at the operation,

when the left lateral cut was made, and that its wound was reopened when the patient bolted the crust of bread. As a general rule a vessel of the size of the posterior palatine would, no doubt, in a healthy young adult, be safely closed in much less than six days; but the anatomical conditions of this artery may have interfered with this result, for it runs in very tough structures, and gives off branches that enter the adjacent bone, pegging it down, as it were, and so perhaps preventing both the contraction and the retraction of its coats.

It is very important to notice not only the recurrence of bleeding up to as late a period as the 14th day, but the amount of the hæmorrhage. The patient very nearly indeed bled to death (and the same was the case with the patient treated by Mr. Willett). And the difficulty of stopping hæmorrhage from this vessel should be pointed out. The artery cannot be commanded from the nose, so that plugging the nose is useless. And as the vessel lies at the upper surface of the palate, next the bone, it cannot be reached, by any of the usual methods of stopping hæmorrhage, from the mouth. Indeed, plugging of the canal appears to be the only means likely to be effectual. Fortunately, this case and Mr. Willett's show how completely successful this method is.

XIX.—*A Case of Spina Bifida successfully treated by Injection of Iodine.* By A. Pearce Gould. *Read January* 25, 1878.*

A. E. W., male, æt. 18 months, was brought to the Hospital for Sick Children, September 15, 1877, and at once admitted. The mother stated that she did not know of any deformity in her own or her husband's family; she had two children, the elder, the patient, and the younger, a fine healthy boy.

She noticed a tumour the size of a hen's egg over the lower part of the patient's spine immediately after birth, the skin over it appeared quite natural, the swelling slowly increased in size, and the skin became thinned. She noticed that the tumour becomes much tighter when the child cries, and she states that it has sometimes been very red and swollen. The child had one fit when 10 months old, attributed to

* I must express my indebtedness to Messrs. Owen, Howard Marsh, and Macnamara for permission to treat this case.

teething; his arms and face were convulsed. He cannot walk or stand, but kicks the legs freely; there is no incontinence of urine or fæces.

On admission the tumour was the size of a cricket ball, sessile, situated over the last lumbar and the sacral vertebræ; it was elastic, fluctuating, easily compressible, and pressure on it caused the anterior fontanelle, which was widely open, to bulge perceptibly. Tumour translucent, with an opaque band along the lower three-quarters of the middle line—no other cord or band seen. Skin over the tumour thin, but healthy in appearance, except at one point where it was thinner than elsewhere, and had a cicatrix-like appearance. No pain on manipulation. No paralysis. No talipes. The child was well formed, but the head was large; fontanelle widely open.

On September 18 I tapped the tumour at the upper part, and slightly to one side of the middle line, with a small hydrocele trocar, and drew off ʒvi. of a clear watery fluid. I then injected ʒss. of Morton's iodo-glycerine solution.* I carefully closed the opening with collodion, and thickly smeared the whole tumour with the same, and then put on a flannel roller. No symptom of interference with the nervous system noticed during the operation.

The temperature rose to 102·8° the same evening, but fell to 100° the next morning.

September 19.—The tumour is hot; child appears quite well, but lies very still in bed. The only treatment adopted was to paint the tumour with collodion every morning, and apply gentle pressure by means of a pad of cotton wool and a flannel bandage.

On the 21st the tumour was smaller, no fluctuation, less translucency, no impulse when the child cried, head strongly retracted. Two days later the tumour had lost its heat, and was still smaller. After this date the tumour gradually regained its former character, and it was evident that the treatment had entirely failed.

On October 5 I repeated the operation, withdrawing ℥j of fluid, and injecting ʒj of the iodine solution. The result of this was the same as in the former case, that is, there was fever for a few days, the tumour was hot, appeared to become smaller and firmer, but in three weeks' time it was in all respects the same as on admission. After this second operation there was draining away of watery fluid on two or three occasions, which was troublesome to stop. As the injection had

* Iodine, gr. x.; iodide of potassium, gr. xxx.; glycerine, ℥j.

been quite harmless I thought I was justified in giving it another trial, and accordingly, on November 5, I tapped the tumour for the third time, and removed ℥ijss. of fluid, and injected ʒij of the iodine solution, and treated the tumour as before. The temperature rose and remained above the normal until the 9th day. The tumour became very tense, hot, red, and tender, but remained fluctuating for a week. On the 9th day a decided improvement was noted, the tumour was flaccid, firmer, smaller, and did not fill out when the child cried. From this time the walls became gradually thicker, and the tumour shrank.

December 14.—There was still distinct fluctuation in the thick-walled cyst, but no appearance of communication with the spinal canal. I tapped the tumour and removed ʒvi. of fluid, and the sac became completely collapsed, showing that its communication with the spinal canal was closed; I then injected ʒj of the iodine solution, manipulated the part freely, and allowed the iodine to escape. There were no bad symptoms, the tumour shrank in size, and became much firmer. On January 23, I found that it was quite consolidated, except just at the upper part, where there was fluctuation; here I tapped again, and drew off about ʒss. of fluid. The tumour now forms a puckered mass of dense tissue over the spine; this has become quite flat at the lower part, but is thicker, and projects at the upper part, and here there is still a small spot where there is fluctuation. There is no paralysis, the child can almost stand, kicks its legs freely, and has no incontinence of urine or fæces. The fontanelle is closing up fast, and the child's general condition is improved.

Remarks.—Looking at the gradual increase in size of this tumour, with the progressive thinning of its walls, I considered it right to submit this patient to the treatment which has been so successful in the hands of Dr. Morton and others. The broad base by which the tumour was attached to the spine, the marked increase in its size during crying, and the ready effect on the fulness of the fontanelle produced by pressure on the tumour, rendered it probable that the communication with the spinal canal was large. Of this fact I could have no doubt when I tapped, for the withdrawal of one, two, or more ounces of its contents made no appreciable difference in the tension of the tumour, fluid poured in so rapidly from the spine to supply the place of that I removed. In several recorded cases the tumours have become flaccid, and collapsed when tapped. But the injection of the iodine

was not followed by any sign of meningitis or spinal irritation; Dr. Morton attributes this to the non-diffusibility of the glycerine solution. To satisfy myself on this point I poured some of the spina bifida fluid into a narrow glass, and then poured some of the iodo-glycerine solution on the top—it at once sank to the bottom of the glass, and remained there as a brown stratum, apparently not at all mixed with the clear fluid above it. I also noticed at each operation that the fluid which flowed from the aperture after the injection of the iodine was perfectly uncoloured; and it will be noticed that the lower part of the sac has been more effectually treated than the upper; I conclude, therefore, that when I injected the fluid into the upper part of the tumour, it at once subsided to the bottom, and did not mix with the cerebro-spinal fluid and tend to pass into the spinal canal. I may add that outside the body the iodine did not produce any apparent change in the spinal fluid.

In by far the larger number of dissected specimens of spina bifida, the spinal cord or its nerves have been found passing through the tumour, or in its walls. Mr. Prescott Hewett states that out of 20 specimens examined by him, only 1 was entirely free from nerves. I have examined 23 specimens in the various London museums on this point, and have found 20 cases with the cord or nerves in the sac, 2 cases without any nerves, and 1 case in which their presence is doubtful. It is well known that it by no means necessarily follows that where there is this important connection of nerves with the tumour there should be paralysis, and I may allude to a case of Mr. Prescott Hewett's, published and figured by him in the 34th volume of the *London Medical Gazette*, as clearly proving this. The usual place for the spinal cord is along the middle line of the sac; and in my case there was a distinct opacity to transmitted light in this situation. These facts make it not unreasonable to suppose that in this particular case the cord was in the tumour. It has been objected to this plan of treatment that when the cord is in the tumour it will be subjected to injurious pressure by the contracting inflammatory lymph which occludes the cavity, and that paralysis will result. On this point I would remark that in such cases the cord has been already exposed to pressure from the fluid, which by its harmlessness shows the power of resistance in the cord, either primary or acquired, which may enable it to withstand the compression of the contracting lymph. This treatment has now been employed in several

cases (15 have been published), and no instance of consecutive paralysis has been recorded. In one case * there was congenital talipes varus, showing some interference with the nervous system, yet cure of the spina bifida was not followed by paralysis or other sign of injurious effect on the spinal cord or nerves. But a case of Sir Astley Cooper's, published by him in the 2nd volume of the *Med. Chir. Soc. Trans.* is still more in point. The specimen is in St. Thomas's Hospital Museum. The case was cured by tapping with a fine needle, and it is seen that the whole cord passed into the sac, and is imbedded in the mass of tissue resulting from the cure; yet there is no mention of any paralysis of the lower limbs, which would surely have been recorded by so astute an observer.

The large size of the child's head, and the widely open fontanelle, made me fear the existence of hydrocephalus. In some cases, where this has existed along with spina bifida, the cure of the latter has been followed by a rapid and fatal increase of the former; there has been nothing of the kind here.

The mode of cure appears to be closely analogous to that seen in the radical treatment of hydrocele; but there is an important difference in the condition of parts in the two cases, the one being a closed sac, the other communicating with a canal full of fluid.

Dr. Morton states that the draining of the cerebro-spinal fluid is readily stopped by collodion. I found it very difficult to stop it; each time it took me an hour. The oozing of this fluid is very dangerous if allowed to continue.

The fluid removed from the sac was perfectly clear, colourless, and limpid, becoming slightly turbid on standing, sp. gr. 1·011, feebly alkaline in reaction. By heat and nitric acid I demonstrated the presence of a trace of albumen in it; but with Fehling's copper solution I entirely failed to get any sign of the presence of sugar. I gave the last quantity of this fluid obtained † to Dr. Dupré, who has kindly furnished me with the following analysis :—

Organic matter, with traces of sugar . .	·21 p.c.
Chloride of sodium	·71 p.c.
Other mineral matter	·15 p.c.
Total solid residue . . .	1·07 p.c.

This closely resembles the analysis recorded by Dr. Marcet in

* Published by Mr. F. Howard Davis.

† That obtained on November 5.

the 2nd volume of *Med. Chir. Soc. Trans.* Sugar existed in the fluid, but in such small quantity that it could not be detected without concentration. May not this explain some, at least, of the discrepancies in the results of the examination of the fluid of spina bifida, and that escaping from the skull in cases of fracture? The fluid removed on December 14, when I found the communication with the spinal canal shut off, was quite different. It was yellow in colour, viscid, highly albuminous, inflammatory. Analysis by Dr. Dupré:—

Organic matter, chiefly albumen, with a slight trace of sugar	4·97 p.c.
Chloride of sodium	·66 p.c.
Other mineral matter	·26 p.c.
Total dry residue	5·89 p.c.

XX.—*Cases treated by Sayre's Jacket.* By Berkeley Hill. *Read January* 25, 1878.

In bringing these cases before the Society to-night, it is not my intention to enter into a discussion of the correctness of the theories which Dr. Sayre advanced to explain the manner in which this immovable case effected the results he claimed for it; nor to describe the method of application of the jacket to cases of angular and lateral curvature, which is probably more or less familiar to all present. This is fully set forth by Dr. Sayre himself in his work on 'Spinal Diseases and Curvatures,' 1877. I desire to-night to speak rather of the results arrived at in six months' experience of his method. For this reason I have collected several patients wearing the jacket—some of them only recently encased, it is true, others who have worn the shell a longer time. Some of them have been under my own care, some of them under that of my colleagues, Messrs. John Marshall, Marcus Beck, and Arthur Barker. Four most interesting cases are contributed by my friend Mr. Jas. P. Bartlett, Surgeon to the Cheney Hospital, Cheney Walk, Chelsea.

The earliest case treated after Dr. Sayre's demonstrations at University College Hospital, on July 9 and 12, 1877, is here to-night. She is a young woman of 23, and has worn her support since last July 13. In 1876 she had been under my care at University College Hospital for psoas abscess, and angular curvature of the lower dorsal region. The psoas abscess was drained and healed, and the patient left the

Hospital with directions to lie down for six months. This direction was carried out with more or less exactness, and a year thus passed away. Just at the time of Dr. Sayre's arrival in this country she applied again at the Hospital, complaining that the old pain in the back, of which she had been quite free for months, had returned, and was then so severe as to prevent her from moving about or even sitting up for more than a very short time. On examination, pressure on the free ends of the floating ribs and in the vertebral groove of the right side caused considerable pain. There was no fulness in the lumbar or iliac regions, or evidence of a fresh accumulation of abscess. There was prominence without tenderness of the 11th and 12th dorsal and 1st lumbar spines. When suspended in the gallows she was relieved of her backache at once. On July 13 the house surgeon, Mr. Frank J. Davies, and the dressers applied the jacket in my presence. As soon as the plaster was set the patient was allowed to go to her own home close by, with directions to remain quietly in bed till the next day, when we would alter any tight or chafing parts, should they exist. She came again the next day, complaining that the jacket, which had been carried too high, cut her under the arms, and that it was generally but not unbearably tight. Notwithstanding these annoyances she had felt so strong and comfortable in her back that she had, instead of going to bed when she left us, taken a walk down Tottenham Court Road to see the shops, a pleasure then long denied to her. The edges of the jacket were pared away and covered with tinfoil, and the patient then went into the country. In November she returned to London much better, accustomed to sit up all day long, and latterly much engaged in nursing a sick sister. For more than three months after the shell was applied she had been free from backache, but latterly, as she had been at harder work, her back had begun to be a little painful if she did not lie down and rest it now and then. The plaster case, which was as firm and as good a fit as when applied in July, was cut down a little before Christmas under the expectation that a lighter and movable case would give her sufficient support. Pressure in the vertebral groove and on the floating ribs caused no pain at all. To this end Mr. Coxeter has adapted a poro-plastic felt jacket, moulded on to the patient while she was suspended in the gallows. Either this does not give her sufficient support, or she presumes too much upon it, being occupied all day long in house-work or in sewing, for she is not now free from backache, except

before rising in the morning, when she is perfectly comfortable. Probably a fresh application of the plaster jacket will be necessary. Nevertheless the mode of treatment may be said to have answered all reasonable expectations. The patient has progressed steadily towards cure, while able to lead a moderately active life and greatly improving in her general health.

The notes of the second case put up in University College Hospital, I am permitted to read by Mr. Marcus Beck, who was the operator on this occasion:—K. M., æt. 16, a delicate boy, growing rapidly; very tall for his age; was at school in Switzerland. In March 1877, was seized somewhat suddenly with pain in the back. Pain increased rapidly. Was said to be lumbago. Any movement caused 'agonising cramps in the stomach.' Had been in bed all the time. In six weeks from the commencement of the attack he was able to be moved to Aix-les-Bains, where the disease was for the first time diagnosed as '*Maladie de Pott.*' He took baths, and was able to get about on crutches. On July 14, 1877, that is, four months after his first seizure, he had distinct angular projection of the spines of the last dorsal and first lumbar vertebræ. Could walk on crutches, but soon began to feel pain in the back. Could not walk 50 yards without crutches because of the pain in the back. He was put up in Sayre's apparatus, and at once abandoned his crutches, carrying them away with him both in one hand and walking comfortably. July 16.—Went to the seaside. August 17.—Was walking about all day, complaining of nothing. October 19.—The same shell was still on, but quite soft and useless; could walk 9 miles a day; had gained flesh. Shell removed. January 22.—He has remained quite well ever since." (This case has been already published by Dr. Sayre in his 'Spinal Diseases,' &c., p. 87, Case No. 30; but as the note there dated is not continued later than August 17 I have ventured to repeat it here with its conclusion.)

Dr. Gooding, of Cheltenham, has permitted me to allude to the case of his little girl, who was encased by Dr. Sayre before a large audience in Guy's Hospital, on July 25, 1877. This was a case of extreme severe and long-standing angular curvature of the middle dorsal region, with history of previous abscess and paraplegia (Case 28 in Dr. Sayre's book). In answer to my inquiry Dr. Gooding has very obligingly written to me an account of his child's progress up to January 23, 1878:—'The health began to improve from the first, and

she was able to move about without pain, and has continued to walk with increasing strength ever since. She has literally had no pain at all. She does her share of play, joining and enjoying children's parties, and going regularly to school.'

This case was almost hopeless—getting steadily worse, more and more deformed, and in constant misery for 8 years, until she was encased in the plaster-jacket. Immediately this was done she began to mend, and has made steady advance ever since.

Having occupied much of your time with narrating these cases I will at once enumerate the advantages which six months' experience of Sayre's treatment has established.

1. Pain is arrested immediately.

2. So far as his spine is concerned the patient is at once able to sit upright and to walk about.

3. Control of the lower extremities, when diminished by debility or paralysis, is rapidly restored in many cases.

4. Abscesses close.

5. The spinal column loses much of its abnormal curve, and consolidates in the improved position.

6. In lateral curvatures a permanent increase of stature is often obtained.

7. Finally, cure is more rapid, and ensues in a manner far less irksome to the patient than by any other method yet devised.

Nevertheless, it must not be supposed, as patients are too apt to do, that the plaster shell will enable the patient at once to behave as if he were already cured, and to indulge in any exertion or exercise that may please him. Indeed, Sayre's treatment has this disadvantage: it gives the patient such complete support that he rejoices in his newly-gained power of locomotion beyond the limits of prudence. Such cases as that of Mr. Beck's and some others which have come under my notice are exceptions. Though able to take sufficient exercise most patients require a good deal of rest and to be checked from too boisterous movement for some months after the jacket is applied.

One word regarding the employment of self-suspension in cases of long-standing and severe lateral curvature. I have endeavoured to inculcate on the patient and her friends the necessity for regular self-suspension in the manner laid down by Dr. Sayre, and certainly in many cases these directions have been carefully carried out. But I have not satisfied myself that the back has obviously straightened during the time they have been under observation. The jacket has

propped up the back and preserved the straightening immediately gained by the first suspension, but further progress from this first advance has not been observed by me. It is to be understood that I limit these remarks to cases of very advanced lateral curvature. Early cases, which are rare among hospital patients, dislike to submit to what appears to them more irksome and painful than the malady it is intended to cure. Such persons it is difficult to persuade to be wise in time.

During these repeated applications of the plaster-jackets several small modifications have been tried, and some found to be beneficial.

1. The chin-piece is a frequent trouble. We have found it useful to cut the part which receives the chin more deeply than were the original patterns. Also to line the leather with thick soft felt. The suspending straps should be attached just in front of the zygoma, and just behind the ear, and hitched on to the ends of the stretcher, not to the notches half way along. Thus pressure on the chin, jaws, and nucha is reduced to a moderate amount.

2. The best axillary slings have a hard firm pad, resembling the cross of a crutch, such bear least disagreeably on the vessels and nerves.

3. The cost of the self-suspending apparatus is materially lessened by replacing the tripod-stand with a pulley screwed into the ceiling, through which a rope is rove; the chin-strap and stretcher are all that are then required.

4. In adjusting the skin-fitting vest it is well to lace its upper edges together with a tape carried backwards and forwards over the shoulders before the lower border is fastened below the hips and perinæum.

5. Fitting the pads requires great care—every bony prominence must be protected by making a soft one of cotton wool project beyond it on either side, not *over* it. In lateral curvature the hips, especially that of the side opposite to the curve, are apt to gall. This is best prevented by a Welsh flannel roller carried round them several times outside the vest, or by a layer of thick felt. Cotton wool is apt to get lumpy in time and lose its effect.

6. It is most important to carry the lower edge of the shell nearly as low down as the pubes in front and the sacrum behind, just escaping the great trochanters, arching it a little at the groins lest it incommode the patient when he sits upright.

7. With adults or heavy patients it is difficult to lay them down on the air bed while the plaster is setting without bending or breaking the shell. To do this easily and without risk Mr. Mayer has made for me a table to which the air bed is attached. This table swings at the middle on two uprights, like an ordinary toilet looking-glass. It can be quickly applied in a vertical position to the patient's back while he hangs. Two broad hooks are slipped under the arm-pits and then hitched to the top of the table. The gallows is set free, and the table, carrying with it the patient, is swung over from the vertical to the horizontal position, when he sinks into, and is securely supported on both sides by, the slack air bed. Mr. Mayer has also made a frame, to be used in the same manner, which can be taken to pieces and folded into a small parcel.

8. Cutting up the shells, or trimming them, is a troublesome business; a small stiff-backed carpenter's saw cuts very cleanly; and Mr. Phillips, house surgeon at University College Hospital, has introduced the French vine-dresser's shears, which is the best we have yet tried. They may be obtained from Mayer and Meltzer.

XXI. *A Severe Case of Erythema Multiforme, Œdematous and Hæmorrhagic.* By TILBURY FOX, M.D. *Read January* 25, 1878.

THE case I bring under the notice of the Society portrays in a remarkable manner the various phases of Erythema multiforme, which are recognised nowadays with general agreement by dermatologists.

W. T., aged 54, a gardener, is the patient. He was admitted to the University College Hospital on January 19, 1878. He appears never to have been troubled with any other illnesses except lumbago, and now and again slight rheumatism. He states that he has always lived well till within the last four months, during which period he has been out of work, and has been very poorly fed indeed, in fact in a state of semi-starvation. Present illness began about three weeks ago. The first indications of it consisted in slight redness, which made its appearance about the forefinger and thumb, and the wrist, at the root of the thumb—*the commonest situation.* During the next ten days, the rash spread over the hand to the wrist, then to the forearm. Both hands were

attacked about the same time, but the left slightly perhaps in advance of the right; the progress of the disease however has been otherwise alike in the two hands. The face became affected about a week ago. The man felt ill when first attacked, and he has suffered from muscular pains in the leg.

Present condition, January 19.—As regards the general state the man looks feverish and ill, and as though, on account of the state of the face, suffering from some acute eruptive disease. He complains of being out of sorts, and feels very thirsty. His tongue is furred, and his temperature is 101·8° F.

As regards the eruptive phenomena, the parts affected are the face, the neck, the hands, and forearms. There is no rash on any other part of the body, nor has there been.

On the face the eruption is most recent, and is limited to the forehead and cheeks. It consists in a number of symmetrically-disposed scattered papules and tubercles of a rosy pink colour, the smallest about $\frac{1}{8}$ inch in diameter, together with groups of four or five tubercles packed together and constituting sharply defined raised patches, a little darker than the separate papules, the patches having developed, according to the man's statement, by the coalescence of the papules. The papules and tubercles feel firmish. The eyelids are red and slightly swollen, and the conjunctivæ are injected at their inner side. The ears are much swollen and reddened.

On the neck there is a large patch of redness on the right side, several smaller, circular, well-defined ones on the left, about the size of a florin, and a few quite at the back, but none at the front. The hands, when first seen, look greatly swollen and discoloured, and as though they were in a state of gangrenous inflammation, some parts being tense, glossy, and mottled purple. The disease affects the whole extensor surfaces of both hands, and the interdigital parts, but does not involve the palmar surfaces in the least. It, however, extends to the front of both wrists, and the extensor surfaces of the two forearms up to the elbow, whilst there are a few spots of the disease higher up upon the arm, above the elbow on the right side, and here the disease consists of a straggling patch with very well-defined edges.

On the left side the eruption consists of an irregular patch, affecting almost the entire back of the hand, only very small islets of healthy skin remaining. There is so much swelling that the hand looks large and bulky, the fingers swollen to

about double their size. The colour of the skin is livid red, for the most part, but pinker mottling appears here and there. Some parts are more elevated than others, though the most swollen parts can be reduced by pressure; the colour, however, is not altered thereby, and is clearly in great part hæmorrhagic. About the wrists the eruption is in smaller and roundish patches, much elevated, however, and livid red in colour, the older ones having a well-defined margin, the newer being less raised and more diffused into the surrounding skin. The separate tubercles vary from ½ to 1 inch in diameter. Near the elbow is a large patch, 3 inches by 2 inches in size, formed of several elevations coalescing; it is very dull red in colour, and threatens to vesiculate. Between the wrist and elbow, on the outer side of the forearm, the surface is generally swollen and congested, but there are portions of healthy skin here, and towards the elbow distinct brownish, reddish, and even pink-centred isolated tubercles are present, having the aspect of ordinary E. tuberculatum and E. nodosum.

The right wrist and hand presents similar appearances, but less pronounced, and on the forearm the disease consists mainly of large diffused red patches, with the discrete patches near the wrist. In the large red patches indications of rings of erythema are plainly visible.

The man complains of pain in moving the limbs, and says they swell greatly, and feel very tight on being hung down.

Comments.—The particulars of this case which I have just narrated show conclusively that the disease possessed the general characters of Erythema multiforme, and that the so-called varieties of Erythema are not true varieties at all, but mere phases of one and the same eruption, which is most aptly designated by the term Erythema multiforme. The simple hyperæmiæ were commingled together with the exudative aspects of the erythema in the same case, and the characters of two approximated, there being no line of demarcation between them. The transition from the hyperæmic to the exudative stage is always an easy one. Very marked differences are apparent only in comparing the extremes of these conditions, viz. the early stage of the one (hyperæmic), and the advanced stage of the other (the exudative.) In the present case the circinate, marginate, and even gyrate, co-existed with the papulate, tuberculate, œdematous, and hæmorrhagic phases of E. multiforme. In certain instances any one of these aspects of the one disease may be

specially, or even (which, however, is rare) solely marked. There are generally transitional stages between several aspects. In this particular case, moreover, it was hardly possible to refuse to acknowledge that in certain spots on the forearm the appearances were those of Erythema nodosum. I could not tell the difference I confess. It is said by good authorities that E. multiforme and E. nodosum are different. This is a case offering evidence in direct contradiction of such a view.

I would just add here that it would seem that in our present case the erythema, beginning at the hand, travelled steadily onwards and upwards to the elbow, and somewhat above the latter, when and where it partook of and ended in the *marginate* character, and that at certain parts effusion occurred to produce the elevated aspects of E. tuberculatum, papulatum, &c; but what determined the effusion it is impossible to say.

It is noteworthy also, as bearing upon the questions of the differential diagnosis, and the etiological relationships of hydroa, herpes, and allied eruptions, and Erythema multiforme, that there was no actual vesiculation, primary or secondary, in the case, although the inflammatory swelling was so well marked.

Pathological.—The clinical history and features of the case threw no light upon the pathology of the disease. There was no evidence of any lymphatic inflammation, nor of inflammatory infarction, caused by embolism in the cutaneous vessels, as held by Bohn and others. Dr. Crocker cut out, with the patient's consent, a portion of skin from one of the circinate patches of the neck, but there was nothing very definite made out by microscopic examination in the sections obtained. The rete mucosum was œdematous, and its cells swollen, and some of them were elongated, as though stretched out by the effusion; the papillæ were in some instances flattened. The more superficial layers of the corium were infiltrated with leucocytes, and the blood-vessels of the deeper parts distended, and surrounded, as it seemed, in some cases, with the same cells, but it was not clear that most of these had not escaped from the divided vessels seen. The other structures appeared healthy, save that the soft epithelial cells about the upper parts of the hair follicles were swollen and increased somewhat in number.

The Diagnosis.— This was fairly easy, because the earlier stages of the disease presented the well-marked

characters of an erythema with slight exudation, forming papules and tubercles, and there were transitional stages between the slighter and more severe forms of eruption. When, however, the man first presented himself in the out-patient's department, showing a swollen and red face, and swollen and purple-coloured, and in places almost black, hands, the first idea that occurred to me was that he was suffering from gangrenous inflammation of his hands, but the first touch of his hand by one's own dispelled that idea, for the disfiguration was recognised as due mainly to œdematous swelling, and on his uncovering his hands the more typical disease was noticed higher up the forearms. The man looked very ill indeed, and had a temperature of 101·8°F. But he was not gravely ill, as though suffering from any of the acute specific diseases, and the eruption had lasted two weeks or more, and was *limited to the hands, forearms, face, and neck,* which certainly would not have been the case if the disease were a true *exanthem.* The prognosis is, of course, eminently favourable in all such cases.

Treatment.—The man had been half-starving for a long time; he suffered from obstinate constipation, acid dyspepsia, and rheumatism. His urine was not loaded to any extent. We placed the patient upon a generous but plain diet, regulated the bowels, and prescribed antacids and bismuth for a time, and then quinine, and put him into bed, and bandaged his fingers and forearms carefully. This was succeeded by rapid improvement, and a cure speedily followed. I would particularly call attention to the value of rest in such cases as Erythema multiforme (including E. nodosum). In our patient the mere sitting up in the ward for a time, and coming to be shown at the Clinical Society one evening, were followed by increased swelling and discomfort in the forearms, and the disease decidedly got worse, so that we kept the man quiet in bed, and bandaged the affected limbs. In all such cases the regulation of the secretions, and the neutralisation of acid conditions, are important preparatory measures to the real remedy for such cases, viz. quinine, which I give with a free hand.

NOTE.—The patient got rapidly well, and was discharged cured.

XXII.—*Two Cases of Psoriasis, the one treated by Prolonged Daily Immersions, the other by an Ointment of Chrysophanic Acid.* By Balmanno Squire, M.B. *Read February* 8, 1878.

THE one case is that of a gentleman, aged 32, a well-built healthy countryman, who has been affected with psoriasis for nine years. His disease appeared first on his legs and forehead. For the first three years of its course his eruption failed to occasion any irritation, but for the last six years it has itched very badly. His mother suffered from lupus of the face. However, none of his family had psoriasis, except a brother, now aged 30, who has been affected with psoriasis, confined to one leg (the right one), for the past five or six years. This brother, as the patient describes it, has the disease 'very mildly. It comes and goes with him.'

This patient, however, at the time of his coming under my care, was most extensively affected with psoriasis. [I have here a water-colour drawing of him taken at this time.] Let me spare details by saying that although I have seen very many cases of psoriasis, I have never encountered a case in which the disease was more extensively distributed, or in which the patches were of larger size. Indeed, this case, so far as I can recollect, caps all other cases of psoriasis that I myself have met with.

Let me summarise the patient's condition, as it was at the commencement of treatment, by saying that while no region of his body was free from the disease, yet that, excepting only his face, and his scalp, and the anterior and posterior (but not the lateral) aspects of the upper half of his trunk, his skin presented only here and there minute islets of freedom from psoriasis.

It appeared to me, therefore, that if prolonged daily immersion should prove itself victorious in this case, I might probably rely on it in the future for every-day use.

To be concise in my account of the details of treatment, I may as well at once say that I kept the patient under treatment by prolonged daily immersion in tepid water for exactly six weeks. We had agreed at the beginning that if he were not well by that time, at furthest, I should have recourse to other means. Now during this time he submitted, on the average, to five hours' daily immersion, but his habits were

not perfectly regular. One day he would take a six hours' bath, and the next day only a four hours' bath. Then again on some days he would take his quantum straight off. On other days he would take it in two instalments, with a rest between. I have no doubt these variations made the process more tolerable to him without interfering much with the result.

Thus much for the *quantity*, or daily duration of the bathing. But now as to the *quality*, or average temperature of the bath. I soon found that the temperature most readily borne by the patient during a prolonged immersion was about 90° F. If the temperature of the bath gets much below this, the patient becomes after a time chilled. If it rises much above this he is thrown into a perspiration, and thus considerably debilitated by prolonged immersion at the higher temperature. No one could support the ordinary warm bath, as we commonly take it at, say, 98° F. for a long time without feeling much lowered by it.

It is well to keep the temperature between 89° and 91° for the whole time. This is quite easy, as I shall have to show.

But to come to the result. By the end of six weeks the patient had lost by this simple means without other treatment of any kind by far the greater part of his eruption. Let me express his improved condition by saying that, computed by the eye, he presented now only a fiftieth, or at the most a thirtieth, of the original area of his eruption, the rest of the originally diseased area having become *completely* restored to the healthy condition. That which before had existed as wide patches was represented now by the thinnest of ribbons, corresponding as is wont to the circumference or border of the original patches.

Let me say, as I truly can, that the patient, in those regions which had been the worst affected, presented now quite as little of diseased skin (that is to say, of skin in any way diseased) as he originally had of sound skin; I could scarcely put it more strongly unless I could have said that he was quite well. These remaining ribbons were very faintly pronounced. He had, by this time, long completely lost the distressing itching which had interfered so considerably with his night's rest.

And now to finish the history of my case. In accordance with my compact with my patient, although much to my regret, I now changed my treatment, inasmuch as he was, at the end of the six weeks, not quite cured.

I now treated him with phosphorus 'perles,' containing each gr. $\frac{1}{30}$ of phosphorus dissolved in oil, rapidly increasing the dose from 1 'perle' three times a day, up to 4 'perles' three times a day, and I also treated him with chrysophanic acid ointment, the strength of the ointment being quite moderate, as there really was so very little for it to do, i.e., about a scruple of the acid to the ounce of lard, raised afterwards to a couple of scruples of the acid to the ounce. In ten days' time, after commencing this variation of the treatment, the patient presented only such insignificant traces of the disease that he decided to return home, as he could not well absent himself from his duties any longer.

Now let me describe the means by which any practitioner may, if he pleases, cheaply carry out the same treatment.

Baths heated by gas can be readily and cheaply procured. Their price varies from £4 to £6. 10*s*. They are procurable of any zinc worker, or, indeed, of any builder. When the bath has been procured it only remains to connect a thin gas-pipe with it—a very inexpensive proceeding. The bath may be filled with pails of water, and emptied in the same way; but for convenience, a water-pipe may be connected, and a waste-pipe also. The bath and the gas-pipe are the only items of expense to the patient—no very great cost.

Now as to the regulation of the temperature; let me show how easy this is. If the bath be covered over by a spare piece of carpet, supported by laths or sticks placed across the top of the bath, a hole being cut in the carpet so that the patient's head may come out through it, and the bath (let us say) being at 99° F.—not that I recommend this temperature—*that* being so, and the gas turned off altogether, under these conditions, in one hour's time, the temperature will fall only 4 degrees, namely, to 95°. During the next succeeding hour (the gas being still off) the temperature will sink only two degrees more, namely, to 93°, and during the next hour it will sink only a degree and a half, namely, to 91·5°. It will be pretty obvious from this that an occasional adjustment of the gas, or even a complete turning off, and subsequently a relighting of the gas is all that is needed.

I may add that the patient can of course read to amuse himself, or may talk with his friends, or partake of light refreshment.

When he gets out of the bath, that is to say a bath of

from 89° to 91°, he will feel *in no way* the worse for it after even a six hours' immersion.

He should, of course, occasionally examine a thermometer immersed in the bath, but fairly good thermometers can be obtained for a shilling, and he may, if he likes, skip out of the bath now and then, independently of any help, to regulate his gas-tap.

One thing remains to be said. The patient after getting out of his bath is apt soon to experience a rather hide-bound condition, owing to the speedy desiccation (after he has dried himself) of his macerated skin; but if he will lubricate himself with a little almond oil, or olive oil, or if he prefers it with a cheaper and equally efficacious substance, namely, common hog's lard, this inconvenience will be completely obviated.

I hope I have established what I desire to convey, namely, that the mode of treatment is efficacious, and that it is cheap, easy, fairly agreeable, and moderately expeditious. It has, however, the drawback that it makes a large demand on the time of the patient.

Of course I have no claim to novelty in describing this treatment. Prolonged daily immersion in tepid water has for very many years been employed in the treatment of chronic skin-disease at Leukerbad, in Switzerland, and I can remember being shown over that curious bathing establishment now exactly a quarter of a century ago.

The same plan, as I more recently had an opportunity of observing, is pursued at Baden, near Vienna. Professor von Hebra, of Vienna, has long been an advocate for a specially unflinching method of employing prolonged immersion, namely, by what he terms the continual bath, a model of the arrangements for which he exhibited at the International Exhibition of London of 1862. Von Hebra keeps the patient night and day for weeks and even for months together in the bath, not permitting him to escape even for the purpose of taking his meals or his night's sleep.

However, the case I have just related would seem to show that the less irksome ordeal of spending some hours daily in the bath can suffice to produce fairly good results.

I should draw attention to the fact that the very truthful water-colour drawing of the case, which I have handed round, does not exhibit (except at the edges of some of the patches) much of the scaly incrustation which is characteristic of psoriasis. This is owing to the fact that the patient had

long been in the habit of seeking relief from one of the inconveniences of his disease by greasing himself diligently every day, and scrubbing off the softened scales very cleverly.

The other case of psoriasis is that of a gentleman, aged 34, who has been affected with the disease for twelve years with, as he explains, fluctuations in the extent of the disease at various times. The eruption never itched much.

I hand round a diagram of his eruption as it existed at the time of commencing treatment; from this it will be seen that the eruption is chiefly massed over the belly and the loins. On the belly three or four of the patches measure as much as three or four inches across. On the loins two or three of them measure three inches across. There are a few tolerably large patches on the upper part of the back, and also on the front of the chest. There is a patch on the left forearm, and one on the right arm, each about an inch in diameter. There are several patches on the scalp. There are a few large patches on the legs. The thighs are almost unaffected. The face is perfectly free.

He was ordered the use of chrysophanic acid ointment, of a strength of 12 grains of acid to the ounce of lard, and he was furthermore directed to take 2 phosphorus 'perles' (containing each gr. $\frac{1}{30}$ phosphorus dissolved in oil) three times a day. In a few days' time the strength of the chrysophanic acid ointment was increased to half a drachm of the acid to the ounce of lard. Within nine days' from the commencement of treatment the characteristic erythematous rash produced by chrysophanic acid had fairly manifested itself, and the substance called unguentum petrolei was ordered to be substituted for the chrysophanic acid ointment. By this time the greater part of the eruption of psoriasis had disappeared—that is to say, within nine days of the commencement of treatment. On the fourteenth day of treatment the patient conceived an impression that the phosphorus was impairing his mental energy, and accordingly he was permitted to discontinue taking the perles. By this time also the erythema excited by the chrysophanic acid had entirely subsided. The patient was therefore ordered to resume the use of chrysophanic acid ointment, now made stronger than before, namely, a drachm of the acid to the ounce of lard. In three days' time, that is to say, on the seventeenth day of treatment, all of the eruption on his body had completely disappeared. The chrysophanic acid ointment had again excited some erythema. On the twenty-fourth

day of treatment the disease still existed on the arms and legs, local treatment with the chrysophanic acid ointment having been still persevered with to the limbs, although since the seventeenth day of treatment no further applications had been made to the body, inasmuch as every sign of the disease had gone from the trunk. The patient still exhibits traces of the disease on the limbs.

I hand round a drawing exhibiting the appearances presented by psoriasis while under cure by chrysophanic ointment. These appearances are somewhat peculiar.

XXIII.—*A Case of Eruption from Bromide and Iodide of Potassium.* By H. Radcliffe Crocker, M.D. *Read February* 8, 1878.

J. B., a married man, æt. 49, was sent to University College Hospital, on February 5, with a peculiar and extensive eruption on the face, and the following history:—

Four years ago he had right hemiplegia and aphasia; was subject to bronchitis, but had never had acute rheumatism, nor was there any history or evidence of syphilis. On January 8, 1878, he attended as an out-patient at the National Hospital for Nervous Diseases, in Queen's Square, having had a fit of an epileptiform character the day before, which left some weakness of the right side and dropping of the right angle of the mouth. For this 10 grains of bromide and 5 of iodide of potassium were prescribed, to be taken three times a day; this was continued up to February 4, i.e. nearly a month, when an effervescing mixture was ordered. The eruption first appeared on January 23, sixteen days after commencing the bromide and iodide, beginning as pimples on the cheeks, and developing into patches by the 27th.

When I saw him on February 5, the eruption presented the following characters:—On each cheek was an irregular, considerably raised patch, about the size of a crown-piece, of a dull, livid, red colour, giving a boggy, almost fluctuating, feel to the finger; the central part was occupied by a brownish yellow scab, but at the periphery, numerous yellow points were observable, which, on close examination, could be seen to be the apices of partially coalesced papules. On pressure, and examining the fluid which exuded under the

microscope, pus cells, epithelium, and sebaceous matter dissolving in ether with some blood-corpuscles were seen. Smaller patches of evidently aggregated papules were present on the end and alæ of the nose, and a few discrete, round, pink papules, $\frac{1}{4}$ inch in diameter, some of them with a yellow apex and softened base, were seen on the cheek, nose, and upper lip. On February 8, the yellow points were no longer visible, and the individual papules, by the aggregation of which the patch was evidently composed, could no longer be made out. The right patch, which came out four days before the other, is covered with a thick brownish-yellow and blood-stained scab, bleeding—which is described as 'spurting out as if cut by a knife'—having occurred twice. On the left cheek only half the patch has the crust upon it, the rest is livid red, and fluctuating. The solitary pimples have also dried into crusts, while their bases are softened. No eruption elsewhere.

Dr. Bell, of the Birkbeck Laboratory at University College, was kind enough to examine the urine, and found iodine in it, but could not detect any bromine. The sp. gr. was 1030; it was very acid, contained much lithates, but no albumen or sugar.

This case forms a pendant to that of an infant with a similar eruption, which I showed to the Pathological Society in January last. It presents the following points of interest:—

1. The age of the patient, nearly 50.
2. The moderate dose, 10 grains of bromide, and 5 of iodide, 3 times a day.
3. The fact of iodide and bromide being given together.
4. Absence of eruption on the limbs.
5. Its being an aggravated form of acne.
6. The absence of bromine in the urine.

In this country these cases are rare in adults, but somewhat less so in infants. In addition to the one I have alluded to, cases have recently been noticed by Dr. Barlow and Dr. Lees, the latter having published his case in the *Pathological Transactions* for 1877. Cases have also been published by Dr. Weir Mitchell; and by Dr. Cholmeley, in a boy of 13, in the *Clinical Society's Transactions* for 1870.

Abroad, however, it appears more common, and cases are related by Neumann—who says that in adults it occurs generally between the age of 15 and 24 years—Veiel, of Cannstatt, Voisin, and others. The last-mentioned describes five

varieties of bromide eruption, but, as is not uncommon in France, he was in the habit of giving 10-gramme doses. The iodide having been given with the bromide is interesting, because that condition was present in Dr. Lees' and the other case of my own; and MM. Damourette and Pelvet, as referred to by Dr. Cholmeley, think that when this eruption appears it is because there is some iodide, as an impurity, with the bromide. There is no doubt, however, that bromide alone will produce it where there is a special idiosyncrasy, and the iodide of potassium alone will also produce, in exceptional cases, a very similar eruption. It is said that the administration of liquor arsenicalis, in five-minim doses, with these drugs, will prevent the eruption in great measure if not entirely.

In Dr. Cholmeley's case, and in several of Voisin's, the eruption was well marked on the limbs, and prevented walking; but there is no rash in this case, except on the face.

That these cases are undoubtedly a confluent form of acne is evident if the course of the affection be watched; transitional conditions from the solitary papules, with which everyone who has given bromide much is familiar, up to the patches, as here exhibited, may be seen in different parts at different times.

Although idiosyncrasy is the chief predisposing cause in these cases, very small doses being sufficient sometimes to produce it, the fact that these effects are more common in France, where ʒij. and ʒiij. doses of bromide of potassium are not infrequently given, tends to show that dose has also some influence.

Some tincture of the perchloride of iron was given to this patient, and the eruption improved rapidly at first, though it had not quite disappeared until April 6, leaving only small scars on the site of the eruption, on which were a few hypertrophied papillæ, soon removed by touching with nitrate of silver.

The case was shown again to the Society, cured, on April 12.

XXIV.—*Two Cases of Cancer of the Breast.* By T. W. Nunn. *Read February* 8, 1878.

At the meeting of this Society, November 22, 1872, I brought forward two cases of cancer of the breast, exceptional as regards duration in opposite extremes: the one lasting over a period of eight years, the other terminating fatally in less than twelve months.

The questions that, amongst others, appeared to me to arise from the consideration of such cases were: What is it, on the one hand, that renders cancer cells stationary, and after a certain development causes them to undergo retrograde changes? What, on the other hand, gives them the impetus to travel to distant parts, and there proliferate, or to encroach upon and infiltrate the regions contiguous to the seat of primary deposit? What share has inflammatory action in stimulating proliferation and promoting diffusion?

The two cases that I bring forward to-night present characters somewhat parallel with those detailed as above specified: the one surviving barely six months, the other still continuing to live on after the lapse of four years since admission into the Hospital with breast-cancer, then already of two years' duration.

Case I.

Anne Doughton, æt. 45, single, a well-nourished woman of healthful aspect, admitted into the Middlesex Hospital February 1, 1877, having in the right mamma a large, hard, smooth mass occupying the lower half and extending on the inner side to above the level of the nipple. The appearance of the skin covering the swelling was natural though tense and ruddy. The nipple was somewhat flattened, but not retracted, the nipple of the left mamma having the same peculiarity. There was no great degree of tenderness except at one point, but a greater elasticity was felt at the outer side of the nipple than at other parts.

Hitherto the patient had enjoyed good health. Her parents were living, and other members of her family were healthy; there was no history of cancer, nor had the patient lost flesh. About the middle of December 1876, that is, six weeks before admission into the hospital, she accidentally had received a blow on the breast now affected from the elbow

of another woman. No pain or bruise immediately followed; a week, however, afterwards, whilst in bed, she felt a slight pain in the lower part of the breast, and then found a small lump, described as being of the size of the tip of the patient's finger. For about a month the lump did not increase and was not very painful, but later, the enlargement was rapid and the pain became severe.

On admission the pain was described as being 'heavy'; the patient was sleepless, without appetite, but had experienced no rigors. To all appearance the patient was suffering from acute mastitis. It is perhaps needless to say that mercury, belladonna, opium, quinine, leeches, ice, availed nothing. The patient being placed under the influence of ether, I made an exploratory puncture with a long narrow-bladed knife without result. Menstruation occurred once after admission into the hospital.

In the early part of April (8th) there was some superficial ulceration, and tubercles of cancer appeared in the skin over the sternal side of the breast; by June 1, infiltration had extended far beyond the limits of the breast, the whole of the right upper extremity had become tense and swollen, and the pain was constant and excruciating. Death took place on June 15.

Post-mortem (by Dr. Findlay): 'the body was very slightly emaciated; right arm œdematous from the shoulder. The whole mamma was the seat of hard cancerous deposit, on section firm and bloodless; the gland was adherent to the subjacent structures; the axillary glands were enlarged and hard (as were also the axillary glands of the opposite side). The right lung was adherent throughout its whole surface to the chest-wall and diaphragm. It was œdematous, and the bronchial mucous membrane was injected and thickened. The left pleural cavity contained 16 ounces of turbid yellowish fluid, and the pleura, visceral and parietal, was coated by a copious deposit of recent lymph. On the surface, at the base of the lung, were several flat greyish patches of apparently cancerous (?) material. The parenchyma, and the bronchial mucous membrane of the left lung were in a condition similar to that observed in the right lung. The heart was soft and pale; liver large, pale, and greasy.'

Case II.

M. A. Hepworth was admitted into the Middlesex Hospital November 12, 1873. Dressmaker; æt. 72; single.

The Registrar has made the following notes:—'Two years previously the patient noticed a lump in the right breast just above the nipple, which gave no pain. It has slowly increased, and at times is painful. For the last six months it has been tender. The tumour is movable and circumscribed, about the size of a duck's egg. *There are no enlarged glands in the axilla.*'

The patient is a small, shrivelled woman, with a brownish skin, which is studded with lenticular freckles, such as are commonly seen in those who are suffering from epithelioma, and which, on close examination, appear to be sessile warts. I advised the removal of the tumour, but the patient declined to undergo any operation.

The case has thus, at the present date, been under observation during rather more than four years; the patient's general health and condition are much the same as on admission. At times there has been a greater degree of debility than usual. After about a year of residence in the Hospital the tumour inflamed, and then an axillary gland became enlarged; subsequently superficial ulceration occurred, but this healed. In May 1876, the patient complained of much pain in her limbs, and her appetite fell off. In April 1877, the centre of the tumour sloughed out; the surface of the resulting hollow, however, became covered by a delicate cicatrix. In January 1878, about a third of the circumference of the remaining mass sloughed in a similar manner; at some points, again, the same delicate cicatrization is showing itself.

The patient has now (January 1878) been in the Middlesex Hospital four years, and is 76 years of age. The excessive weakness and anorexia have passed away, whilst the tumour itself has but slowly increased; it has undergone two acute attacks of necrosis. The condition of the axillary gland (or glands) remains nearly unaltered. There is no swelling of the arm. As regards family history, the patient's mother died of phthisis, æt. 32; her brothers and sisters were all sickly, and died young.

The rapid progress of the disease in Case I., together with the early appearance of brawny swelling of the upper extremity, has led me to the belief that in such cases *the lymph canalicular system* is the structure chiefly, if not primarily, involved or attacked. The brawny swelling of the arm and side of thorax would receive explanation if the hypothesis rests on a true foundation. From the nature of the lymph

canalicular system the demonstration of its special share in the diseased changes must be difficult. For, as Dr. Creighton has said, in respect of Virchow's theory on the origin of cancer, 'It is next to impossible to prove that, or any other theory of cellular growth, by direct and objective demonstration' ('R. M. O. P. C.' new ser. vol. vi. p. 182: 1875.) Köster, of Wurzburg, has, however, stated ('Die Entwickelung der Carcinome,' 1862) that the cells of the new growth in epithelioma of the skin lie in the lymphatic channels, and are there produced by the germination of the endothelium proper to these channels. This has been disputed by Waldeyer ('Sammlung Klinischer Vorträge,' 1872).

It is reasonable, I think, to assume that the lymphatic system may, in certain cases, be the essential seat of the disease, since we see that degeneration, or other special abnormality of the arterial or of the venous system, may play so important a part in producing the phenomena characteristic of other diseases. It would be, I feel, intrusive if I were to occupy the time of the Society in multiplying illustration in this direction. In a clinical point of view the immediate interest lies in the severity of the symptoms. In the cases of this *early* brawny swelling of the integuments that have fallen under my observation the pain has been acute, and death has taken place within twelve months.

As an example of the rapid extension of cancer in the lymphatic system I would refer to a case recorded (though with a different purpose from that at which I am now aiming) by my former colleague, Mr. Henry Arnott, then assistant surgeon to St. Thomas's Hospital, in his paper 'On the Therapeutical Importance of Recent Views of the Nature and Structure of Cancer' ('St. Thomas's Hospital Reports,' vol. ii., 1872). Mr. Arnott recounts the case of a male patient, æt. 60, who, within one month of the appearance of a sore on the *frænum linguæ*, had the glands below the jaw enlarged. Two months more had not elapsed when he was seen by Mr. Arnott, who recognised the sore on the frænum to be epitheliomatous, and detected that there was *induration and fixation of the glands above the clavicle.* The disease was consequently beyond the reach of surgical interference.

The brawny swelling of the arm, commonly to be observed in cases of cancer of the breast of long standing, begins often insidiously by a puffiness of the hand, and extends thence upwards. This, in some instances at least, is due to

pressure on the axillary vessels from cancerous infiltration of their sheath.

Swelling of the arm of this kind, while it sorely adds to the discomfort of the sufferer by rendering the limb unwieldy, and by restricting the positions in which the patient can rest, has not, however, the grave significance that attaches to the solidification of the integuments, beginning at, and spreading from, the site of the first discovered tumour.

The possible occurrence of such rapid brawny swelling has a most important bearing on the question of operation for the removal of a cancerous tumour. I have met with instances where a tumour of the breast had been removed by operation, without any check being given to the rapid and fatal course of the malady—brawny swelling having immediately followed the operation. The surgeon possibly, and the patient's friends certainly, attributed the subsequent rapid diffusion of the disease to the operation: a conclusion which was, if what I have advanced be correct, not only erroneous, but highly mischievous. I submit, therefore, that in all cases where a tumour of the breast is brought under the notice of the surgeon in its early stage, it is well, for a time, to closely watch it before attempting removal by the knife, or other means.

Turning now to the details of Case II., the concurrence of the enlargement of the axillary glands with the inflammatory action in the tumour itself was, it may be suspected, more than a simple coincidence; in fact, it also included cause and effect.

The practical deduction therefrom is the necessity of shielding a cancerous tumour previous to operation, or when operation from some cause or other cannot be put in force, from all mechanical and other violence.

Whether any direct therapeutical measures can be taken with the object of sustaining the patient's constitutional powers, and thus rendering inflammation less likely to happen, is a matter demanding consideration. The reputation that iron has had in the treatment of cancer may be derived from its occasionally beneficial effect in fortifying the system against destructive inflammatory attacks.

Prognosis, in chronic disease, has often a value beyond its scientific interest. The contributions of Mr. Sibley and Mr. Morrant Baker to the *Transactions of the Med. Chir. Soc.* have placed at our command an invaluable mass of

statistical data, and have told us the average duration of life under varying circumstances in cancer.

The minute study of extreme individual cases is none the less necessary, for it is only by the estimation of extreme possibilities that prognosis can be attempted, or, with any degree of justifiable confidence, declared.

XXV.—*Note on Tendon Ligatures.* By George W. Callender. *Read February* 8, 1878.

FROM the facts brought under the notice of members of the Society, it is certain that doubt exists as to the trust to be placed in catgut ligatures when used for tying an artery in its continuity: a material which occasionally fails to ensure the arrest of the blood stream for a time sufficiently long to allow of the cure of the aneurysm, and which, through its failure imperils the life of a patient, is not one which can be recommended with confidence.

I hope that a more extensive trial may confirm the promise we as yet have—that in tendon ligatures we possess a material which resists the solvent action of its surroundings in a wound, so that, although eventually dissolved, its continuity lasts longer than that of catgut. It ties better knots, and the knots do not slip. Its strength is sufficient, and, its solution taking place but slowly, it answers well for sutures, especially where some strain is put on them—catgut quickly yielding under such an influence. These specimens of tendon ligatures are sent to me by Mr. Hulme, of Guildford, who has received them from Mr. J. M. Girdlestone, surgeon to the Albert Hospital, Melbourne. They are extracted from the tail of a marsupial, and are of various sizes as they grow. They are not split—split tendons, Mr. Girdlestone says, make very good sutures, but he has not used them on arteries. The natural tendons, however, have been freely used for ligatures. They are simply washed and dried. Before use they should be soaked in carbolic oil, and Mr. Girdlestone recommends that they should be softened in carbolic water just before being employed.

As the supply of these tendons is distant, and as I am unable to find any at all like them of sufficient length in this country, I am having prepared ligatures which are made from tendons of the horse. They have much the same characteristics as the tendons from the marsupial.

XXVI.—*A Case of Multiple Papillomatous Growths in the Larynx, extirpated by complete Laryngotomy; Removal of the whole length of both true and false Vocal Cords; Preservation of the Voice; Co-existence of Thoracic Aneurysm.* By J. Burney Yeo, M.D., and Joseph Lister. *Read February* 22, 1878.

Part I. By Dr. J. Burney Yeo.

THE subject of this communication is a labouring man, 49 years of age, who first came under my observation on October 13, 1877, when he applied as an out-patient at the Brompton Hospital. His chief complaint was of severe pain at the upper part of the left side of his chest, of a gnawing character, extending to the left shoulder, and down the left arm to the elbow. This pain was almost constant, but it was worse at night, and prevented him from sleeping.

He also complained of dyspnœa, and especially of orthopnœa; he could not lie down in bed. He was *very hoarse*, and this hoarseness he had suffered from for seven or eight years. He had no cough to speak of, but he had been losing flesh lately.

On examining his chest, a distinct pulsation at the sternal end of the 2nd left intercostal space was at once observed. The pulsating area was limited to a space which might be covered by a florin; there was, at this time, no very perceptible expansile impulse, and no thrill over this area; there was no bellows murmur, but the 2nd cardiac sound was strongly accentuated, and there was an area of dulness corresponding with the area of pulsation. The area of cardiac dulness was slightly increased, but there was no evidence of general cardiac hypertrophy. The heart's impulse was not strong, and the first sound was feeble. The inspiratory sound all over the chest was prolonged, noisy, and harsh, sometimes it had a whistling character; but there were no moist râles to be heard anywhere. In order to ascertain the precise cause of the hoarseness, and the difficulty of inspiration, I proceeded to examine the patient with the laryngoscope; I then found that the upper part of the larynx, above the vocal cords, was the seat of an apparently pedunculated, vascular, warty growth, appearing about as large as a hazelnut, which almost filled up this part of the laryngeal cavity, and completely concealed the glottis, except during inspiration. But during inspiration one could see the left vocal

cord, and a dark triangular interval between it and the growth, through which air entered the air-passages. But the right vocal cord was quite concealed. The growth seemed attached by a thick pedicle to the anterior commissure above the vocal cords, and could be seen to be moved freely by the expiratory column of air. I was unable to see any other growth than this in repeated examinations with the laryngoscope.

I advised the patient to come into King's College Hospital, which he did on October 16. We then obtained some further particulars of his history. He was invalided from the Crimea in 1856, where he had been serving with the Marines, on account of rheumatic pains in the *shin bones.* Nine years ago he was in Charing Cross Hospital with bronchitis, and had been hoarse and short of breath ever since. Eighteen months ago he was laid up for six months with wandering gout, attended with swellings of the joints.

On June 4 last, whilst at work, helping to pick-up an iron rail, he heard something crack, and was suddenly seized with severe pain in the superior cardiac region, and extending to the left shoulder. He has suffered from this pain ever since. We kept him at rest in bed, and watched him for some time to see if his symptoms would undergo any amelioration; but after he had been in the Hospital a month his condition appeared to be aggravated rather than relieved; the pain in the chest was at times very severe, and his breathing was becoming more laboured; he could not lie down in bed, and he was himself almost clamorous for some operative interference.

Soon after his admission into the Hospital I had the advantage of consultation with Professor Lister as to the best means of dealing with the intra-laryngeal growth, and after long and careful consideration we agreed that the growth was too large, and too broadly and firmly attached, to be satisfactorily dealt with from above, and Professor Lister determined to perform the operation described by him below.

The growths proved both larger and more numerous than could be expected from laryngoscopic examination; the largest of the growths removed is presented to the Society. It is a lobulated, condylomatous-looking body, about the size of a small chestnut, and measuring nearly an inch in its longest diameter. It is furnished with a short, thick pedicle, about a quarter of an inch in length.

Sections of the growth are placed under the micro-

scope, and they will be seen to present the well-known characters of the papillomata. The patient made a good recovery from the operation, and it was soon found that he retained considerable phonetic power, as much, indeed, as he possessed before the operation.

His voice is harsh and hoarse, but it is a voice. He can make all the vowel sounds at a low pitch, but high-pitched vowel sounds he, of course, cannot produce.

He can read distinctly, and so as to be heard at some distance.

Laryngoscopic inspection now shows an entire absence of the normal intra-laryngeal structures. The arytenoid eminences can be seen, and also the ary-epiglottic folds stretching from them, somewhat swollen.

If the patient is made to speak when under laryngoscopic observation, it is seen that he brings together, towards the median line, these ary-epiglottic folds, and it is by their vibrations that voice sounds are produced.

By December 21 the wound was so far healed that he was enabled to leave the Hospital.

On January 12 he came to the Hospital to have the wire connecting the two halves of the thyroid cartilage removed. He then complained that the pain in the left side of his chest, which had never quite left him, had returned with great severity, and that he could get no rest at night for it.

On examining his chest again, the pulsating area at the sternal end of the 2nd left interspace appeared to have increased in extent, and had now a distinctly expansile impulse; the area of dulness had also increased somewhat. There was still, however, no bellows murmur to be heard. The breath sounds were quite natural all over the chest.

The patient was admitted into the Brompton Hospital on January 7, to undergo treatment for his aneurysm; and by the kindness of Dr. Tatham I have been able to retain him under my care.

To relieve the pain at night he has had to be injected hypodermically with morphine; he has been kept resting in bed, and has been given iodide of potassium, first in 20 and then in 30-grain doses, three times a day.

His general condition has much improved under this treatment. He was wretchedly worn and emaciated on his admission a few weeks ago. He now sleeps comfortably, and can lie down in bed on either side without difficulty; formerly he could not lie at all on the right side. He said when he

attempted to do so he felt as if the 'left side were turning right over.' Since he has taken the iodide of potassium the area of dulness has certainly diminished, and the expansile impulse feels less strong.

This case is especially interesting from two points of view: 1st, as showing how much vocal sound may be produced without the intervention of the vocal cords, the ary-epiglottic folds acting as vibrating media. 2ndly, from the singular coincidence of the existence of intra-laryngeal growths together with thoracic aneurysm.

Most assuredly, in pre-laryngoscopic times, the alterations in the voice and the obstruction to respiration observed in this case, when first it came under observation, would have been regarded as the consequences of aneurysmal pressure; and it is difficult to see how, without the use of the laryngoscope, that misapprehension could have been set right. For my own part, when I first made use of the laryngoscope in this case, I was more prepared to see paralysis of one or other of the vocal cords than the appearance which I met with.

It is another and a remarkable instance of the clinical value of the laryngoscope.

Part II. By Mr. Lister.

The growth, as seen by aid of the laryngoscope, appearing single and pedunculated, I first attempted to reach it without disturbing the vocal cords, by means of cricotomy: that is to say, by dividing in the middle line the anterior part of the cricoid cartilage, the crico-thyroid membrane, and some of the upper rings of the trachea. I had never performed this operation before; and I was struck, considering the age of the patient, with the degree to which the cricoid yielded to firm traction with hooks upon the edges of the wound, so as to afford very satisfactory access to the vocal cords from below. But it now appeared that not only was the growth which had been seen from above of much larger size than we had anticipated, but that both vocal cords were studded over throughout their entire length with smaller vegetations of similar character. It was therefore evident that, in order to take away all the disease, it would be needful to remove the chordæ vocales; and I therefore at once proceeded to convert the operation into one of complete laryngotomy, by dividing the thyroid cartilage in the middle line. But, before doing this, in order to avoid the risk of blood passing down into

the trachea, I adopted the means employed by Dr. Foulis, of Glasgow, in his operation of extirpation of the larynx, viz., a bent leaden tube, the shorter leg of which is introduced into the trachea, to plug it. This I agree with Dr. Foulis in thinking much more convenient than Trendelenberg's instrument, which, besides being liable to get out of order, occupies much greater space in the wound. In order to reduce as much as possible the inconvenience arising from this cause, I had the longer leg flattened from above downwards, as you observe, at the part where it joins the shorter leg. The shorter leg is rounded, and slightly conical, and, in order to make it fit the trachea closely, I wound around it a narrow strip of thin sheet caoutchouc, to the amount which experience proved to be required. As soon as this had been ascertained, and the instrument had been pressed into its place, there was no further anxiety about bleeding. And not only was the hæmorrhage for some time very free, but, in the further stages of the operation, the patient vomited repeatedly, and the vomited matter, pouring into the larynx, would have been extremely embarrassing, if the communication with the trachea had not been securely plugged. The longer leg of the tube, being about five inches in length, reached well down over the sternum, so that the patient was kept under the influence of chloroform by holding a cloth containing it over the orifice, without in the least interfering with the operation.

The thyroid cartilage was divided by a firm stroke of a probe-pointed knife passed into the interior of the larynx and drawn forwards, and, its halves being held aside, I cut away with fine curved scissors the entire length and thickness of each vocal cord, together with part of the anterior process of the arytenoid cartilage, to which the cord is attached; and other parts of the mucous membrane in the vicinity, including the false vocal cords, being found sprinkled with small warts of the same kind, these also were clipped freely away. Solution of chloride of zinc, 40 grs. to 1 oz., was then applied to the raw surfaces, after which the halves of the thyroid cartilage were brought accurately together by a stitch of pretty stout silver wire, passed through a hole drilled in the cartilage at each side. The movements of the arytenoid cartilages were now seen going on as if for phonation, but their approximation produced no effect upon the wide oval gap which existed in the former situation of the vocal cords. In order to counteract the tendency of the prominent

box of the larynx to interfere with cicatrization, as so often seen in suicidal wounds, I supported the skin at each side by a pair of buttons of sheet lead, connected by a wire stitch, taking a broad hold of the soft parts, and passing through a central perforation in each button and wound once round to secure it.* These buttons, acting like the tips of the fingers, entirely relaxed the cutaneous margins, which were brought accurately together with horse-hair stitches, except at the lower part of the wound, which was occupied by the tube. The patient having been removed to the ward, a tent was erected round his bed, with the air kept warm and moist by steam from a boiling kettle; and about five hours after the operation, all oozing of blood having ceased, I withdrew the tube and applied a moist dressing of boracic lint, the patient now breathing freely by the mouth. I need not give minute particulars of his progress. On the second day after the operation, he experienced considerable difficulty in getting rid of a copious secretion of mucus; but after this all went on as well as could be desired, neither pulse nor temperature rising much above the normal standard, and eight days after the operation he stated that he had not been so comfortable for nine years, thus confirming the belief, derived from circumstances in his history, that the disease had been of a very chronic character. The wound united by first intention where it was stitched, and the part which had been occupied by the tube closed kindly by granulation and cicatrization, so that he was discharged with the wound soundly healed just four weeks after the operation; and three weeks later, when he came back to have the wire stitch removed from the thyroid cartilage, the two halves were found to have united firmly.

But that which has induced me to comply with Dr. Yeo's suggestion that I should join him in bringing this case before the Society, is a circumstance of great importance in connection with it, for which I was not prepared, although I ought to have been so. I had expected that our patient would be able to cough like other people, but I had not anticipated that he would retain any voice above a whisper. And now, in order to make myself intelligible, I must refer to some observations which I made upon the movements of the larynx in 1861, in connection with an article which I had engaged to write on Anæsthetics for Mr. Holmes' 'System

* This button stitch will be found described and figured in the 'Lancet,' June 5, 1875.

of Surgery.' The observations were published in that article *; but a work on practical surgery being not a likely quarter for information regarding the physiology of the larynx, it is not remarkable that they should have attracted little attention. I had more than once observed, when serving as House Surgeon under Mr. Syme, in the Royal Infirmary of Edinburgh, that the deep stertor which sometimes occurs in patients under chloroform, having passed into complete obstruction of the respiration, the tip of the tongue might be drawn out well beyond the range of the teeth, without any advantage; but, if the organ was then submitted to firm traction, the additional pull, though it did not seem to draw the tongue any further forward, had the effect of clearing away the obstruction to the breathing. When I came to lecture on Surgery, extra-academically in Edinburgh, I illustrated this point to my class in my own person; for I found that I could imitate the profound stertor of chloroform, and could still produce it when the tip of the tongue was protruded beyond the range of the teeth; but, if I seized it with a pocket-handkerchief, so as to obtain secure hold, and exerted traction upon it till I felt considerable uneasiness in the frænum linguæ, it became absolutely impossible to maintain the stertor. Afterwards, when I had engaged to write the article on Anæsthetics for Mr. Holmes, I determined to try to find out something more regarding this curious and important circumstance, and resorted to an experiment on one of the lower animals. Having put a sheep under chloroform, in a slaughter-house in Glasgow, I made an incision into the pharynx, with the view of inspecting the larynx. But, having done so, I saw an appearance which filled me with amazement. Instead of having the chordæ vocales exposed to view, as I expected, I saw only a pair of red valves, moving indeed in accordance with the panting respiration of the creature, as I held the towel with the chloroform before the wound, but with such rapidity as entirely to prevent me from seeing the rima glottidis beneath. I had just got so far with my observations, when the inspector of the slaughter-house walked up and told me he would not allow such brutality in the institution over which he presided, and forthwith ordered me off the premises. Thus, I had a taste of what has been since, alas! experienced so largely by our profession in this country, viz., how ignorant prejudice, with good intentions, may obstruct legitimate scientific inquiry.

* See Holmes' 'System of Surgery,' 1st ed., vol. iii., p. 102.

Pondering further upon the subject, I felt convinced that the effect of firm traction on the tongue upon obstructed breathing under chloroform, must be in some way produced through the medium of the nervous system; and in order to see, if possible, the actual state of matters, I availed myself of the laryngoscope, which had about that time been introduced into Britain. I found no difficulty in inspecting my own larynx, and thus at once ascertained the nature of the red valves which I had seen in the sheep, viz., that they were the pulpy vascular portions of mucous membrane, which surmount the summits of the arytenoid cartilages, or, in other words, the posterior parts of the aryteno-epiglottidean folds. For it appears that these cartilages have movements which had not been then recognised by physiologists, and I suspect are not generally understood at the present time. We all know, of course, their rotation upon their vertical axes, by means of which the vocal cords are approximated, or separated. And it is also known that they are liable to lateral movement, by which their summits with the mucous membrane that clothes them can be brought into mutual apposition in the middle line, or withdrawn from each other. But it is not, I believe, generally known that the summits of the cartilages, thus laterally approximated, are liable to an antero-posterior movement, by means of which the soft folds above them can be carried forward and applied to the base of the epiglottis, so as to constitute a secure valve of the entrance to the respiratory passage. Such, however, was at once seen to be the case as soon as I inspected my own larynx, not, as is generally done, for the purpose of viewing the chordæ vocales, but to ascertain the mechanism of profound stertor. When I made the sound, the portions of mucous membrane referred to passed forwards to the base of the epiglottis, and were seen to vibrate in that position; producing, what I have termed, *laryngeal stertor*; and when I made the stertor pass into complete obstruction to the entrance of air, the arresting agent was seen to be the same pulpy masses pressed more closely forward. When, however, I drew my tongue forwards sufficiently strongly to occasion considerable uneasiness in the frænum linguæ, I saw that the position of the epiglottis was not altered in the slightest degree by the traction, but, altogether independently of my will, and in spite of it, the mucous valve retired backwards, and a way was open for the entrance of air. Thus my previous impression was completely confirmed

that this effect of firm traction on the tongue is not mechanical, but a reflex nervous phenomenon.* At the same time, my attention being now directed to the aryteno-epiglottidean folds, I observed their action under other circumstances, and found that, besides being the organ of laryngeal stertor, they constituted the obstructing agent by which the exit of air is prevented during the expiratory effort which produces coughing. I daresay most gentlemen in this room, and even most physicians whose attention is specially directed to the treatment of pulmonary complaints, if asked by what means the escape of air is prevented during the accumulating pressure which results in a cough, would reply by closure of the rima glottidis. But the simple observations to which I refer, made mainly in consequence of the circumstance that my attention happened to be directed to other matters than those which before, or since, have interested the laryngoscopist, showed that the strain of coughing is not allowed to be borne by the delicate structure of the true vocal apparatus, but by those pulpy masses of mucous membrane which cannot suffer from such treatment.

Hence, gentlemen, the aryteno-epiglottidean folds having been left intact in the operation, and likewise the arytenoid cartilages, with the exception of the anterior processes of their bases, I fully expected that, if all went well, my patient would be able to cough as well as other people. But I was, I confess, much surprised to find, on the morning after the operation, that he could not only cough perfectly well when escape of air from the wound was prevented by pressure upon the dressing, but that he could speak, not merely in a whisper, but in a good, though deep and gruff, voice. And yet I ought to have been prepared for the possibility of such an occurrence. For I knew that I could produce laryngeal stertor at pleasure in my own person; and if an audible noise could be made by an agency in the larynx, altogether independent of the vocal cords, it might have been anticipated that such a sound might be produced after their removal, and answer the purpose of a deep monotone voice. If I may do so without offence, I will produce a voice of this kind before you. I now speak with my aryteno-epiglottidean folds. And since I knew from our patient the possi-

* Of course we are all aware that the relaxed tongue does very often obstruct the respiration mechanically under chloroform, and under such circumstances gentle traction upon it is sufficient to clear a passage for the air, as, for example, by drawing forward or raising the chin.

bility of this kind of voice, I have noticed its employment sometimes in ordinary parlance, as in the sentence 'Get away with you,' which I heard uttered by one little boy to another in the street not long since in a voice far too deep and gruff to have been produced at his age by the chordæ vocales.

The patient was now introduced, and after the linear cicatrix over the box of the larynx had been exhibited, he coughed in a natural manner, and then uttered some sentences in a deep, hoarse monotone, plainly audible throughout the room.

XXVII.—*A Case of Excision of the Lower Part of the Rectum.* By Timothy Holmes. *Read February* 22, 1878.

THE operation by which the whole of the lower part of the rectum is removed in cases of tumour comprising a considerable part or the whole of its circumference, has been frequently practised in foreign countries, but, as far as I can learn, has only rarely been performed in England—the majority of our surgical writers being strongly opposed to it. Yet there is probably a sufficient experience of this proceeding, among the members of the Society, to enable others to check the conclusions to which the case I am about to relate seems to point; and, in any case, its history will, I think, serve a useful purpose as a contribution to the knowledge of an operation which, as yet, is decidedly rare in this country.

The patient, Ann L., æt. 44, a married woman, was admitted into St. George's Hospital on October 24, 1877. Her last child had been born nine years before, and ever since that time she had suffered more or less from diarrhœa and vaginal discharge. She had had six children, and five miscarriages. No syphilitic history could be elicited, nor was there any appearance of old syphilis. She had had various treatment in private, and at hospitals in London and the country, but without benefit. Latterly she had been suffering from great difficulty in passing fæces, it being always necessary to use injections, which gave great pain, but usually procured a motion. The motions were very hard. She presented an emaciated and distressed appearance, but was otherwise healthy. The anus was surrounded by a ring of hard pendulous tumours; and within the bowel, extending

about two inches from the anus, were a number of similar hard tumours; one of them was also perfectly perceptible from the wall of the vagina, which was slightly ulcerated in that situation. Under ether the finger could be passed through the diseased portion of the bowel, and the intestine above seemed quite healthy, as was the upper part of the vagina and the uterus. The glands in both inguinal regions were slightly enlarged and hard.

On consultation it was decided to try the effect of black wash locally, and iodide of potassium internally; but, as the general health decidedly gave way under the treatment, and as the morbid growths could only be extirpated by removing the whole bowel and the tissues surrounding the anus, it was determined to perform that operation.

On November 22 she was secured in the lithotomy position. An incision was made around the anus, and prolonged backwards to the coccyx. The recto-vaginal septum was carefully split, as far as the projection of the new growth into it permitted, but where the latter involved the vaginal wall it was necessarily torn through; the walls of the intestine were freely separated from the surrounding parts in the ischio-rectal fossa by the finger and knife, and the bleeding, when it was troublesome, was repressed by the benzoline cautery. When the gut was thus sufficiently liberated it was quite easy to draw it down, and it was then laid open with a pair of scissors. It being thus ascertained past all doubt that the limits of the disease were reached, the bowel was divided transversely, the bleeding vessels tied, and the coats of the gut stitched to the skin; the wound behind the bowel was then reunited, a catheter was placed in the bladder, and the patient sent to bed. No attempt was made to sew up the hole in the vagina, which was about the size of a fourpenny-piece. As the end of the bowel was well below it, this laceration was expected to close, as indeed it did. No fæces ever passed through it.

I need not relate the progress of the case in detail. The bowels were kept confined by the use of opium, and did not act for more than a fortnight. The temperature never rose above 101°, and only to that height on one day.

She improved rapidly in health as soon as the action of the bowels was re-established. No sphincter power has been regained up to the present date. The bowels act about once a day; sometimes only once in two days. She has a little notice of the action, and manages to keep herself quite clean

and comfortable without any apparatus. The bowel has remained at the orifice. There is no absolute prolapsus, but a little tendency thereto. The wound behind has cicatrised, with the exception of a little sinus, of no great depth, near the coccyx. She is in much better health than she has been for many years, and is much pleased with the result of the operation.

A few leading considerations regarding this operation may be briefly indicated:—

1. With regard to the nature of the disease for which it may be performed. Doubtless the majority of cases in which so severe an operation would be held justifiable will be cases of cancer, and usually of the epithelial kind. But there will be exceptional cases, like the present, where the disease is innocent, and a few, I suppose, of myxoma, or some other of the semi-malignant or sarcomatous tumours. In this instance the new growths were examined microscopically by various observers. Some were disposed to regard them as papilloma, others as adenoma; but all were agreed that they were not heteroplastic, and had no resemblance to any form of cancer. Prof. Rizzoli was so kind as to send me a very interesting pamphlet the other day, relating a case in which he had removed the lower end of the rectum for a fibrous growth. In such cases the operation appears to me to be clearly indicated. There is no other way of removing the disease; its removal is necessary for the relief of symptoms which will ultimately prove fatal, and which meanwhile involve severe suffering, and its success may fairly be expected to be permanent.

In cases of epithelioma also the relief may be permanent, or, at least, the recurrence may be long delayed. Meanwhile the patient is freed from the disease, which he is not by colotomy, and he has an anus in the natural situation more easily managed than that of colotomy, even when it has no sphincter power, which, however, it sometimes has, almost to the natural degree.

2. With regard to the extent of bowel which can be removed. This seems to me to vary in different cases. In the instance before us, the excised portion of bowel measured two inches after it had been kept in spirit for some time, and it does not seem in the dead body safe to go much farther. Mr. Cripps, in the interesting essay on this subject which obtained the Jacksonian Prize of the College of Surgeons, says that the peritoneal pouch can be fixed at its highest level, in the male subject, by filling the bladder, and then

possibly three inches may be safely removed; but, in the female, the recto-vaginal pouch comes so low that it is dangerous to go much higher up the bowel. If more requires removal, the deep dissection should be carried on as much as possible with the finger and blunt instruments, so as, if possible, to press the peritoneum upwards.

3. The dangers of the operation appear to depend entirely on wound of the peritoneum and on hæmorrhage, leaving aside such cases as Nussbaum's, quoted by Mr. Cripps, in which portions of the male urethra and bladder were removed. I take it as agreed that such operations should not be undertaken, but the operation be confined to those cases in which either the rectum is alone implicated, or possibly the vagina also to a slight extent: though, if this is the case, as in the instance before us, the surgeon ought to be very sure that the disease is limited. In such operations the hæmorrhage will depend mainly, as I believe, on the nature of the disease, and the implication of the tissues around; when, as in my patient, the disease is of slow growth, and not diffused in the cellular tissue around the bowel, the bleeding will probably be moderate, though free bleeding must always be expected, and arrangements made to deal with it.

4. As to the method of operating I can say little, having never seen the operation except in this case. The lithotomy position seems to me much superior to the lateral recumbent, and the incision down to the coccyx (first practised, I believe, by Denouvilliers) certainly gives space, and enables the surgeon more easily to draw the bowel down and control the bleeding. Whether it is better to stitch the bowel to the wound, as I did, or to leave it *in situ*, as is recommended by some American surgeons and was practised by Prof. Rizzoli in the case above alluded to, time will show. The knife seems to me a handier and better instrument for the dissection than the thermocautery or *écraseur*, and, provided the dissection be carried on slowly and the finger used as much as possible, I see little cause for apprehension in an ordinary case.

5. There remains the question of the patient's condition afterwards. Mr. Cripps lately showed, at the Pathological Society, the parts removed in a case operated on by Sir J. Paget a year ago, where the patient is now well, goes to business in the city, and has no incontinence of fæces. And many other patients have been equally fortunate. My patient has, up to this time, acquired no control over the motions. I believe the difference depends, mainly at least, on the extent

to which the external sphincter is removed. In my case the parts around had to be very freely dealt with. Possibly, as has been suggested, I believe, by some writer on this subject in America, the track of the wound may consolidate, and afford some support to the bowel, if the cut end of the latter be not displaced but left at the bottom of the cavity.

Taking all the circumstances of the case together, I was pleased with the result of this operation, and think it worthy of more extended trial than it has yet had in this country.

XXVIII.—*Description of the Dissection of a Foot, from which the Os Calcis had been removed by Subperiosteal Excision. The case is reported in Vol. VIII. of the 'Society's Transactions,' page* 77. By TIMOTHY HOLMES. *Read February* 22, 1878.

IN this case the boy had, as stated in the report of his case, recovered with a moderately useful foot, though after severe inflammation, with ankylosis of the ankle-joint, and with a less graceful and less agile gait than after the common operation. He died of disease of the lungs last autumn. The following particulars may have some value as supporting the opinion expressed formerly by me at the Society, and as a contribution to the literature of subperiosteal excision.

A longitudinal section was carried through the tibia and the foot, terminating between the second and the third toes; this gave a side view of the joints of the foot. The arch of the foot was nearly absent, and the flattened plantar surface formed with the bones of the leg a right angle.

Perfect bony ankylosis connected the upper surface of the astragalus with the tibia, and its anterior surface with the tarsal bones. A few striæ of condensed bone traversed the cancellous tissue of the ankylosis, but it was impossible to detect in the angular mass any vestige of the joints, although the posterior surface of the astragalus retained a thin coat of cartilage.

The tendo Achillis was connected by a few fibres to the posterior surface of the astragalus, and was continued into a small and thin mass of bone, consisting of two halves with intervening fibrous tissue. The relations of this bony mass to the tendo Achillis behind, and to the plantar muscles in front, identified it as a diminutive calcaneum. To the astra-

galus it had none but fibrous attachments, and it was slightly movable.*

The second tarso-metatarsal joint, through which the section fell, was beginning to disappear by the same process of bony ankylosis. The change was nearly complete at the centre of the articulation, but a line of cartilage extended above and below the point of ossification as far as the surface.

XXIX.—*A Case of Unilateral Atrophy, with Muscular Spasm.* By FREDERICK TAYLOR, M.D. *Read March* 8, 1878.

JANE C., æt. 22, a needlewoman, came under my notice, at Guy's Hospital, in May 1877, complaining of involuntary contractions of the muscles of the left arm and leg. She states that her father and two brothers are alive and healthy, but her mother and an infant sister died of phthisis. With the exception of measles and scarlet fever, in early childhood, she has had no illness until a few years ago, when her present troubles commenced.

Her account of this commencement is not at all clear, and her recollection of dates very uncertain. However, she says that, about five years ago, she suffered from some illness, which she describes as 'slow fever,' in which she was weak and ill, but without either pain and swelling of the joints, eruption on the skin, or diarrhœa. She was attended at home by a medical man; was in bed two or three months; and when convalescent had a second attack. During this she had complete aphonia for nearly three weeks, and recovered her full voice only very slowly. She had been up once or twice, and was progressing favourably when she observed a twitching of the left biceps muscle; after a time this was followed by a similar twitching of the muscles moving the left toes. Her father tells the tale somewhat differently; he says, indeed, she was only five years old when the disorder commenced; that the illness was intermittent fever, and then, on being questioned as to the existence of paralysis, he says that the limbs were at first paralysed. But I am not sure that he clearly understands the meanings

* The heel was remarkably shapeless and knobby: its external two-thirds only were formed by the calcaneum, the inner third being completed by a tuberosity projecting from the astragalus.

which we attach to the terms 'intermittent fever' and 'paralysis.' For some time, at any rate, the twitchings caused her scarcely any inconvenience, but during the last four years they have been gradually getting more severe, and have taken on the violent form they now present.

She is fairly nourished, and healthy in appearance, but she has an anxious and wearied expression of countenance. When standing she is not perfectly upright, the left shoulder being depressed, and the spine in the cervico-dorsal region convex to the right side. On exposing the arm and chest a remarkable degree of muscular hypertrophy is observed. The biceps forms a large, round, prominent mass, over which large veins course; the triceps, pectoralis, trapezius, spinati, and rhomboid muscles are also developed to a high degree, as well as those of the forearm, where, however, the enlargement is not so striking to the eye. The difference between the muscles of the left side, and those of the right side, which are about the size one would expect in a girl of her occupation, is shown by the following measurements:

Over the centre of the biceps, left side $10\frac{1}{4}$ inches; right side $8\frac{3}{4}$ inches.

Forearm, $1\frac{1}{2}$ inches below the internal condyle, left side $9\frac{3}{8}$ inches; right side $8\frac{7}{8}$ inches.

When one's attention is turned from the muscles to the bones of the limbs, and indeed of the body, then it is seen that they are actually shorter on the affected side than they are on the opposite. The left chest is in all its dimensions smaller than the right; the left clavicle is shorter than its fellow, and the bones of the upper extremities are also considerably shorter on the left side. It is difficult to get accurate measurements of the two arms, on account of the muscular spasms presently to be described, but there appears to be at least $1\frac{1}{2}$ inches difference in the full lengths of the limbs.

Whether sitting or standing she commonly holds the left arm firmly to the side, the forearm flexed at a right angle, and the left fingers grasping the right hand in rather an awkward fashion. This awkwardness is due to a muscular contraction by which the fingers are flexed quite irregularly. When she attempts to move the hand, and especially when she stretches the arm out before her, the flexors and extensors of the fingers act quite involuntarily, causing slow, forcible movements, with some distortion of the affected part. A position often assumed by the fingers under these circumstances is the following: the little finger is forcibly

extended, especially at the metacarpo-phalangeal joint, where it is drawn backwards out of the line of its metacarpal bone; the ring-finger is also forcibly extended, but not beyond its natural position; the fore and middle fingers are flexed, and the thumb is held in a line with the forearm.

Often the muscles are for some minutes, or even half an hour, quite quiet; but spasm both commences spontaneously, and is brought on by shaking or grasping the arm, and by attempts at voluntary movements on her part. The contractions are painful, and often so much so as to cause distortion and flushing of the face; sometimes also they disturb her sleep.

The left foot is much arched by the contraction of posterior tibial muscles, and she has spasmodic contractions affecting the calf of the leg, similar to those seen in the arm. In consequence, the toes are turned towards the ground, and walking becomes painful. Sometimes, also, when she is getting out of bed, she is unable to put her foot to the ground from involuntary contraction of the flexor muscles.

Tested with galvanism, the hypertrophied muscles react to both currents, but to neither current so readily as do those of the healthy arm—that is to say, for the same amount of contraction, a greater number of cells, or a greater intensity of the induced current, is required on the left side. There is no anæsthesia.

She does not suffer from fits, nor has she to her knowledge ever done so.

The optic discs are normal.

She has been mainly treated by the administration of bromide of potassium internally, and the application of the continuous current to the affected muscles. She experiences decided benefit from this: the involuntary spasms are less forcible, and the intervals of rest from contraction are longer.

In September and October, 1877, she was treated for a time by the injection of atropine. One two-hundredth of a grain was injected into the substance of the biceps muscle, and a similar amount into the triceps; and this was done daily.

On each occasion she stated she had distinct benefit from the treatment, so far as the spasms were concerned; but the injection gave rise to some inflammation, and after two or three days the pain and irritation were so great that the injections had to be discontinued.

I have brought this case under the notice of the Society,

firstly, and mainly, because it is a kind of case not very frequently met with, and one which has excited considerable interest in most of those who have seen it, with reference to its nature and associations. And, secondly, because it raises some questions as to the connections between the several varieties of spasmodic movements known under the names, spastic contracture, spastic rigidity, athetosis. So far, however, as this subject is concerned I shall have little to say; it was introduced at another society, about two years ago, by Dr. Gowers, in a paper which tended to show the close connection between the various forms of spasm (athetosis amongst them) which affect paralysed and partially paralysed limbs.

For the cases with which this is most closely allied various names have been employed. Partial atrophy of the brain, spastic contracture, unilateral atrophy of the body, infantile hemiplegia, have been used according as they have been regarded from their pathological side, or from this or that aspect of their clinical symptoms; but probably all the cases to which these names are applied have the same origin.

To begin with the clinical features of this case, it is undoubtedly one of atrophy of one side of the body. The left clavicle is shorter than the right, and the left arm shortened to the extent of 1½ inches, though the arm is in other respects greatly developed. This decided shortening gives more probability to the earlier date assigned to the occurrence by her father. The greater number of cases of unilateral atrophy result from lesions in quite early life, where they are not actually congenital.

In consequence of the disturbance to function nutrition is interfered with, and the growth of the limbs, rather than their development, is retarded. Such retardation would be naturally proportionate to the length of time during which it was enabled to act; and one would not expect to find much difference in the length of limbs that had grown *pari passu* until the age of 17.

But that which I am especially interested in is the condition of spasm in the muscles.

A few years ago a new disorder was described, or at any rate a new name was introduced into medical literature. Dr. Hammond described two cases of what he called 'Athetosis,' 'mainly characterised,' he says, 'by an inability to retain the fingers and toes in any position in which they may be placed, and by their continual motion.'

Can the present case be considered a case of athetosis?

The more one considers the cases originally described as athetosis, and compares them both with later recorded cases, and with other cases of hemiplegic spasm, the more it becomes plain that, if the term athetosis is to be retained, it must be not as representing a group of symptoms constituting a disease, but only as the name for one symptom or condition, the associations of which may be very different in different instances.

In the first case recorded by Dr. Hammond * there were grotesque muscular movements of the fingers and toes, not of simple flexion and extension, but of more complicated form, occurring during both sleeping and waking hours, restrained only by certain positions, and by extraordinary efforts of the will. The arm was hard and rigid during their continuance, and the muscles of the calf were in the same state, while the toes were in motion. The contractions were slow, apparently as if with deliberation, and with great force. Then, finally, there is a description of the irregular positions of flexion and extension occasionally assumed by the fingers at certain times.

As compared with these, it appears to me that the movements in my case are not to the same extent spontaneous; there is little of the separate independent contraction of the muscles of the fingers leading to their irregular and constant movement.

The main feature in her case is the violent, painful, tonic contraction of the whole arm, which comes on directly any attempt is made to straighten it, and results in a position of forcible and fixed extension. While the limb remains in this position, the violent contraction continues, and she can only relax it by directing her attention to flexion of the arm, which, with great effort, she finally brings about.

But when I read carefully Dr. Hammond's second case, I cannot find that the spontaneous, irregular, continual movements of the fingers and toes were present at all. There was fixed tonic spasm, overcome only by intense efforts of the will; and in these respects it is sufficiently closely approached by the case exhibited this evening.

If the movements cannot be classed with athetosis, then the term 'spastic contracture' has a wider application, and the present case might be more easily included under it, or even, considering the commencement in early life, under the head of *hemiplegia spastica infantilis*; but of this it would be considered a modified form, rather than a typical instance, if

* 'Diseases of the Nervous System,' 5th edit. 1876, p. 723 *et seq.*

one follows the description given by Benedikt.* The muscular contractions, he says, are not permanent, diminishing during rest and sleep, and on distraction of the attention; brought on by voluntary impulses directed to the affected or even unaffected muscles, passing quickly from one group to another, and presenting other peculiarities which separate them far enough from the late rigidity of adult hemiplegia.

In this case, the whole mass of muscles seems to be brought into action at once, and that in consequence of a voluntary impulse directed to the extensor muscles, which, moreover, are the more violently contracted.

There is no shifting of the contraction from one set of muscles to the other, and though they are stimulated by movement, neither rest nor sleep can be considered a certain preventive, for she is often disturbed during the night by their painful spasm. In the leg also it is chiefly one kind of contraction that prevails, namely, that of the muscles of the back of the leg.

With regard to its pathology, it no doubt has a cerebral origin, and is probably due to a small local softening in or about the central ganglia of the right side. I think one cannot go further.

Numerous cases of unilateral atrophy of the body have been found associated with unilateral atrophy of the nervous centres, and it is quite possible that the lesion which has caused these disturbances of function and growth in the limbs has at the same time retarded the growth of the brain; but should this be so, I should still look upon the original lesion, and not upon the cerebral atrophy, as the chief cause of the conditions we have before us.

XXX.—*A Case of Aneurysm of the Left Subclavian and Axillary Arteries, treated by Enforced Rest and a very limited Diet.* By J. W. Hulke. *Read March* 8, 1878.

A FRENCH-POLISHER, æt. 36, but much older in appearance, was admitted into the Middlesex Hospital, March 28, 1877, complaining of pain over his left shoulder-blade, and down the back, and the inner side of his arm, so

* 'Nervenpathologie und Electrotherapie.'

severe that it broke his sleep and made it impossible for him to continue at his trade.

On stripping him a large, prominent swelling was apparent on the left side, in the root of the neck, and in the armpit. The collar-bone separated the cervical and the axillary parts of the swelling, which gave the whole somewhat of the figure of an hour-glass. The cervical portion reached outwards, rather beyond the junction of the middle and outer thirds of the collar-bone, and it passed inwards, under cover of the sterno-mastoid muscle, so deeply that when this muscle was fully relaxed, and the finger-tips were deeply pressed between its inner border and the windpipe, the innermost limit of the swelling could not be felt. The whole swelling pulsated strongly: the pulsation was expansile; it was not merely plain to the touch, but it was also evident to the eye, especially in the part above the collar-bone, and it was attended with a marked thrill and bruit, which were more intense near the posterior border of the sterno-mastoid muscle.

The left wrist-pulse was feeble as compared with that in the right radial artery, and the hand was purplish and cold, and the forearm œdematous. Crossing the middle of his back, below the shoulder-blades, was a conspicuous web of dilated veinlets, which he said was a birth-mark, and was thought to represent a mackerel.

History.—He admitted to being a hard drinker, and said that during the two preceding years he had exceeded more than before. He drank chiefly beer, but also spirits. His father, æt. 78, was still alive; his mother died of cough, æt. 60; his brothers and sisters were strong; and, so far as he knew, no members of his family had had any such swellings as his, nor had any died of apoplexy, or been palsied.

His present illness began, he said, five months before, with pain along the inner side of the left forearm, and numbness of the little and ring fingers. This was thought to be rheumatic, and it was treated as such. The pain continued to increase, and two months later he first became aware of the lump in his neck. At the end of February he went into King's College Hospital, where his arm was bandaged as high as his shoulder. He was allowed meat, potatoes, bread, as much as he could eat, but he was restricted to a limited quantity of fluids. The swelling was, he was told, a very serious matter; and he was advised, he said, to have his arm taken off at the shoulder, for it was 'his limb or his

life.' Scared by this advice, and alarmed by the death of a patient occupying a neighbouring bed, within three days after amputation at the shoulder-joint, and discontented with the failure of the means adopted to relieve his intense suffering, he took the bandage off his arm contrary to orders, and left the Hospital about one week before he entered the Middlesex Hospital.

Not doubting that the swelling was an aneurysm, to which the ordinary surgical methods of treatment were inapplicable, we tried first to make him understand the very serious nature of his malady, and that without his assistance nothing could be done to check its progress, in which case his life would before long probably come to a very distressing end. He appeared to realise this, and promised docility. After a respite of a few days, for the purpose of getting him used to the ward and attendants, he was restricted to bed, and forbidden to sit up or rise from it for any purpose, and he was strictly enjoined to lie as still and to move as little as possible. The arm was bandaged from the finger-tips to the shoulder with a thin flannel roller. The aneurysm was painted with a liniment of extr. belladonnæ ʒ ii., glycerine ʒ j., and an opiate was given at night. His diet was limited to bread ℥ viii., and milk a pint a day, with a cup of weak tea morning and evening, and he was allowed to drink as much water as he chose.

The pain in the shoulder and arm very quickly became less severe. He soon slept better, lost his fretfulness, and became cheerful. Within a very few days the aneurysm was observed to be less prominent, particularly the infra-clavicular part. At the end of a fortnight from beginning the treatment (April 16), this part of the aneurysm no longer conspicuously distended the front fold of the armpit; it was also firmer, and it pulsated less forcibly. The cervical part also was firmer, and certainly not so prominent. Pain, which at the date of his being taken into the Hospital was really severe, had by this time become relatively slight. Four days later (April 20) no pulsation could be detected in the axillary part of the swelling; beyond it, in the lowest part of axillary artery, only an extremely feeble pulse could be felt, and the presence of a pulse in the radial artery was doubtful. From this date there was a steady improvement in the condition of the aneurysm until the middle of May, when the pain returned, and the aneurysm began again to enlarge, and the pulsation and thrill, which had become very

faint, again increased. The cause of this retrogression was rendered apparent on May 23 by an outbreak of violent drunkenness. An empty gin bottle was discovered hidden beneath his bedding, and his wife, who had been allowed to visit him, confessed that she had surreptitiously brought him liquor, as he complained of being starved. Next day, when he had become sober, he said he was thoroughly ashamed of his bad behaviour, and promised amendment. After this I found it necessary to increase his ration of bread from ℥ viii. to ℥ xii., and to allow him a little fish. By June 11 the part of the aneurysm below the collar-bone had shrunk to a small hard knot, which was not readily felt by those who had not before examined it, and there was a very marked improvement of the part in the neck; it also was much smaller and harder, and it pulsated much less forcibly. The numbness of the fingers had almost disappeared, and for several days he had had scarcely any pain in the shoulders and arm. June 21.—Pulsation continued absent from the infra-clavicular part, and the lower and front part of the cervical portion of the aneurism felt firm and solid, and only at the upper and back part, near the outer border of the sterno-mastoid muscle, could a very feeble pulsation be detected. Crossing from before backwards, the summit of the now greatly lessened swelling, a pulsating line was traceable, which it was thought might be the transversalis colli artery; and two days later (June 23) a second narrow pulsating line was found coursing parallel with the upper border of the collar bone. June 28, five days later, pulsation and bruit having completely ceased, his diet was slightly improved, and he was allowed to sit up in bed and to leave his bed for a short time daily, carrying the arm in a sling.

July 9.—A slight pulsation was again noticed at the upper and back part of the aneurysm, and this part seemed also slightly larger. He again complained of pain. Upon this he was confined to bed, and his food reduced to bread ℥ viii. with a pint of milk per day. This was not followed immediately by such marked improvement as was observed at the beginning of the treatment, and his behaviour was so often troublesome and disorderly that it was suspected that he was surreptitiously getting liquor through his wife, whom we were obliged to permit to visit him, as without this concession he would not have remained in the Hospital.

August 8.—His misconduct made it necessary for the house-surgeon to discharge him. The infra-clavicular part

of the aneurysm was at this date a solid knot of about the size of an acorn. The cervical part was so shrunken that it no longer caught the eye when uncovered. It was quite firm, as if solid. A very feeble pulsation, not expansile, continued. I doubted whether this was in the sac itself, or simply communicated. No pulse could be felt in the lowest part of the axillary artery, and that in the radial at the wrist was so weak as to be barely perceptible.

Remarks.—At the date of the patient's admission into the Middlesex Hospital, the symptoms made it impossible to doubt that the swelling was an aneurysm of the subclavian and axillary arteries, involving the entire third and second parts of the former, and also, it was believed, to an extent not precisely definable, the first part; and of the latter vessel the upper and middle portions, and, to some extent, also, the lowest part.

Ligature of the left subclavian artery, at the inner side of the aneurysm, was here plainly impracticable; and ligature of the axillary artery, or of the beginning of the brachial artery beyond the aneurysm, appeared so unpromising that I also rejected it. From kneading, recommended by my former teacher, the late Sir William Fergusson, in exceptional circumstances, as where the ligature cannot be employed, I was deterred by the fear of bursting the sac. On the left side of the neck it would not be open to the accident which occurred in the case which suggested this method to that eminent surgeon. As his house-surgeon I was standing near the patient whilst the aneurysm, a rather large one, implicating the right subclavian and innominate, was being handled. The man lost consciousness, staggered and fell, and when, after a short interval, he regained his senses, he could not rise from the ground; he had in a few moments become hemiplegic. I suppose few will doubt that this was caused by cerebral embolism by a piece of clot dislodged by the manipulation.

The introduction of foreign substances into the sac, as fine wire (first practised by my former colleague, the late Mr. Charles Moore), and the injection of coagulating fluids, have not yielded results which allowed me to try either of them here; and my own experience of galvano-puncture of aneurysms, as also what I had seen of it in the hands of others, deterred me from trying it in this case.

Driven from local measures, and remembering the good results I had seen obtained by it in large aortic aneurysms

by the late Dr. Todd, I was induced to give a fair trial to enforced rest and a very restricted diet—Valsalva's method, less his repeated bleedings—a method which has much engaged the attention of our Dublin *confrères*. The result cannot but be thought highly satisfactory, for the improvement followed so closely and progressed so steadily, whilst the treatment was honestly pursued, that it is difficult to dissociate it from it. It is mainly on account of the encouragement it affords for the treatment of similar aneurysms to which the ordinary surgical methods are inapplicable, but also on account of the doubts I have heard have been expressed in another hospital, where the patient now is, respecting the nature of his malady, that I submit the case to the consideration of this Society. To me these doubts afford a strong presumption of the completeness of the cure.

XXXI.—*A Case demonstrating the value of Electro-Magnets for the Removal, or Displacement, of Iron or Steel Chips from within the Eye.* By MACDONALD MCHARDY. *Read March* 22, 1878. *Communicated by* BRUDENELL CARTER.

DAVID B., aged 31, employed in a woodworking-machine shop, came under my care, at the Royal South London Ophthalmic Hospital, in consequence of an injury to his left eye, caused by a chip flying from either a steel tool or the hammer with which he was striking the tool.

I saw him first on July 4, 1877, twenty-four hours after the accident, when commencing iritis was indicated by slight ciliary congestion and moderate discolouration of the iris. An altered reflex from a portion of the cornea, below and external to the centre, indicated where the steel chip had impinged. *Before* dilatation of the pupil no lenticular opacity could be detected, and the ophthalmoscope revealed nothing abnormal in the vitreous. The tension was normal, there was but insignificant tenderness. He stated that the eye was far easier than it had been on the previous night, and that he did not wish to remain in the Hospital. Accordingly, as he had presented himself at the Hospital just before my departure, I prescribed some atropine drops, two grains to the ounce, and directed the patient to keep his eyes shaded until the next day, when he was to be seen by me again.

On July 5, patient said that he had no pain in the eye. The congestion had diminished since the previous day. The pupil was widely dilated, vision equalled twenty-fortieths; the corneal surface was almost normal. But there was a shining, sharply defined opacity, evidently a fragment of metal, upon the anterior surface of the lens, occupying a situation downwards and inwards from its centre. The lens was seen to be perfectly transparent, except at the small area hidden by the chip, which was a narrow, flat strip, about one-fourth as wide as it was long, and in length about equal to one-fifth the corneal diameter. The foreign body, lying in the direction of the downward and inward meridian of the cornea, had its peripheral end nearer to the margin of the dilated pupil than its other extremity was to the centre, and thus occupied a position which explained how it had been concealed prior to the use of atropine. Reluctant to deal at all precipitously with such a case, I enjoined absolute rest for the patient, took him into the Hospital, and continued the use of atropine. From the situation and shape of the chip, I judged that, if left alone, it was certain sooner or later to gravitate down behind the iris and lead to destructive mischief in one or both eyes; hence that its removal was imperative. Reflecting on the case, I recognized the possibility of the lens capsule being wounded by the chip, notwithstanding the continued transparency of the lens, for I reasoned that possibly the chip by its very presence was plugging a laceration in the lens capsule, and thus excluding the aqueous humour. But I could not feel sure that the lens capsule was so damaged as to necessitate the formation of cataract. I was loath to subject the eye to the dangers which attend the extraction of a transparent lens by the scoop, and I did not feel confident that such a measure would insure the removal of the foreign body. Knowing that, owing to the effect of mydriatics disappearing upon evacuation of the aqueous, it would be very difficult, if indeed possible, to keep the foreign body in view during an attempt to dislodge and secure it with forceps, and feeling that if, subsequently to effecting its removal thereby, the lens should become opaque, I should never be able to decide whether the original injury, or my manipulations, had set up the cataract, it occurred to me to try how a magnetic spatula would meet the requirements of the case, for thereto I could attach the chip and watch its movement, if only I contrived to match a needle to the spatula, so that the latter would

plug the puncture made by the former, and thus prevent the loss of aqueous, and the attendant diminution of the pupil.

These conditions would have been equally well fulfilled either by a permanent or an electro-magnet; but with the former I foresaw this danger, that the chip, in jumping towards an approaching magnet, might, by some sharp edge, lacerate the capsule. On this ground an electro-magnet seemed preferable, as it could be applied to the chip before any attractive power was called into play; and this power could be interrupted at pleasure, during the manipulations, so that any undesirable position of the fragment, with reference to the spatula, might be altered before extraction was commenced.

Messrs. Weiss made the electro-magnetic spatula, which I exhibit, and which, when connected with a six-celled Smee's battery, seemed likely to fulfil the indications of the case.

The instrument will be seen to consist of a straight piece of soft iron wire, 4mm. in diameter, having one of its ends, for a distance of 15mms., dressed down to form a spatula of perfectly uniform stoutness with a smooth, blunt, flat point, and having coiled upon it six layers of very fine insulated copper wire, so that the coil extends over some 3cms. of the iron wire from the spot where it is reduced to the spatula gauge. This, when connected with the above-named battery, lifted, by its spatula point, a three-quarter-inch iron tack.

I related the particulars I have just mentioned to my colleague, Mr. Brudenell Carter, who then kindly saw the case with me, and suggested that, before introducing the spatula, it would be well to try what traction, if any, a powerful magnet held in front of the cornea might exert upon the chip—a suggestion so practical, that I was startled to think it had not sooner occurred to me.

On July 6, the patient being seated in a chair, I held before his cornea a powerful electro-bar-magnet (one ten inches long and an inch in diameter, coiled with four layers of stout insulated wire, and connected with two pint Grove's cells), and gradually approximated one of its poles to the eye, until, when they were about four inches apart, the chip sprang from the lens to the inner surface of the cornea. Thereupon the magnet was withdrawn, the chip fell into the anterior chamber; the patient was placed upon a couch, ether was administered, and an incision was made, through which the chip was evacuated, and a small piece of iris, which prolapsed, was excised.

Immediately the chip left the surface of the lens it revealed a patch of opacity precisely of its own magnitude; and it was therefore evident that complete cataract might be anticipated. This followed, and the injured lens underwent absorption without any inflammatory reaction being produced. Atropine was applied until the absorption was completed; and the patient has normal distant vision with a lens of twelve dioptrics, and reads No. 1 of Jaeger's types with a lens of 15 dioptrics.

My best thanks are due to Professor Tyndall, Dr. Tibbits, and Mr. Ladd, for the kindly prompt attention which they accorded to the inquiries which the consideration of this case induced me to make; and to the last-named I am farther indebted for the loan of the electro-magnet, which was instrumental in bringing about the happy result which it is my good fortune to be able to record.

This case has so aroused my desire to ascertain the fullest extent to which electro-magnets may be usefully employed under analogous circumstances, that I have been diligent in seeking information in that direction; and I find that nothing but patient experiment offers any hope of deciding what form or strength of electro-magnet may be most advantageously applied. Therefore, at present, I refrain from making any suggestion thereon, beyond expressing my conviction that it is an error to suppose that by greatly augmenting the attractive power of a strong magnet its influence on a *minute* particle of iron is *not* increased. I deem it worth while to dispute such an hypothesis, on account of the frequency and confidence with which I have heard it announced, notwithstanding that it would seem to be disproved by the single fact that (in accordance with a certain ratio) the more powerful a magnet is, so much greater is the distance at which it will attract an iron filing. Any interest which this case may excite will be materially increased by perusal of a paper by Dr. McKeown in the *Dublin Journal of Medical Science* for September 1876, where he narrates how he has successfully used permanent magnets for the diagnosis and treatment of cases of steel and iron within the eye.

N.B.—Since presenting the above case to the Society, but before the publication of this volume, I have succeeded, by the aid alone of an electro-magnet held in front of the cornea, first in diagnosing the presence of, and then in extracting, through the track by which it entered, a fragment of steel,

measuring 2 by 5mm., which had been imbedded posterior to the iris for 48 hours, during which time the wound of entrance and the pupil had alike become closed with lymph.

XXXII.—*On Hæmorrhagic Retinitis and its Connection with Gout and with Thrombosis of Veins.* By JONATHAN HUTCHINSON. *Read March* 22, 1878.

IT is a special duty of all specialists to bring all fragments of special knowledge which may accrue to them, in the cultivation of their particular fields, for the elucidation of the problems of general medicine. Under some sense of this obligation I wish this evening to ask the attention of the Clinical Society to certain facts in reference to cases of multiple hæmorrhages into the structure of the retina.

The occurrence of retinal hæmorrhages in connection with the form of retinitis which attends renal disease is well known and frequently observed. In some of these cases the patches of blood are very numerous and the distension of veins may be great. In these, however, there is usually reason to think that the extravasations are secondary to the formation of new material in the retina, and it is not to this form of disease that the term 'retinitis hæmorrhagica' has been appropriated. Under this latter name we recognise cases in which there are none of the white deposits which occur with albuminuria, and in which the hæmorrhages are very abundant and are probably one of the earliest phenomena. In some instances the extravasations are exceedingly numerous, and the whole fundus is speckled or streaked over with blood. Well marked cases of this kind are rare, and, speaking generally, the following statements are true concerning them.

They never occur to young people, but always to those who have passed middle life.

Very frequently there is a direct history of gout. Even when the history of positive gout is not to be obtained, the patient's habits and state of body are such as to favour a suspicion in that direction. Usually but one eye is affected.

There is not infrequently a statement that the attack was sudden.

The local conditions in the retina are peculiar, not only in that the white deposit of renal retinitis is absent, but that the hæmorrhages are not round but flame-shaped, radiating

Retinitis Hæmorrhagica

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Mr Hutchinson's cases of Retinitis Hæmorrhagica.

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from the disc, and that the veins are extremely turgid, and the arteries small.

To illustrate these statements I will, before proceeding further with general comments, show some sketches, and briefly describe the cases to which they belong.

The first drawing (Plate IV. Fig. 2) is from the eye of a shoemaker, æt. 44, whose sight had been defective five weeks. The disc was much swollen, the veins were very much enlarged, and there were streaks of extravasated blood of various sizes in all parts of the fundus. Many of them were along veins, whose trunks they partly concealed. Almost all were distinctly flame-shaped. The arteries were small. Nowhere were there any of the white deposits usually seen in renal retinitis. Near to the yellow spot were some patches probably resulting from old extravasation. The detailed notes of the case have been mislaid, and I can only state from memory that he had no albuminuria, but seemed in good health, and that there was reason to suspect gout, although he had not had a definite attack. The other eye was sound.

I do not know that any illustration of this somewhat rare condition has been published excepting in Jaeger's Atlas, where a very beautiful and characteristic portrait is given. Flame-shaped hæmorrhages occur over the whole fundus. Both eyes are affected. The veins are distended to bursting. The patient was a corpulent innkeeper, but there is no information given as to gout.

Mrs. Jones, the fundus of whose eye is represented in the portrait which I now show (Plate IV. Fig. 1), was under my care in 1871. She had suffered much from rheumatic gout and true gout, and had frequently had attacks of temporary congestion of the eye. She had lived liberally, taking beer and port wine. She was aged 72, stout and florid, and of dark complexion. Her urine contained no albumen, but numerous hyaline casts. She had for many years suffered severely from bilious attacks, which were always relieved by free purgation. Her left eye had failed in sight during the last month, without pain, and without any sudden attacks. She could with it see only $\frac{20}{70}$, and that very imperfectly.

In the fundus were exceedingly numerous hæmorrhages, all of small size, but almost all more or less flame-shaped. Those which were punctate still showed striated margins; none were round blots. There was considerable haze about the disc, but nowhere any glistening white deposits, such as characterise renal retinitis. The veins were turgid, and the

arteries exceedingly small. The veins were angular from turgescence, and at some places were rendered indistinct by blood-effusion into their sheaths.

If I may be allowed to use these two cases, in each of which we have a pictorial representation before us, as typical examples of the malady, I will now allude, as briefly as possible, to the features which distinguish it. In order that I may avoid the fallacies which result from trusting to memory, I have copied out the notes of all the best marked cases which have been under my observation during the last ten years. It would be out of place for me to trouble the Society by reading them, but they will be available, if thought worthy, as an appendix to my paper in our 'Transactions,' and what I have further to say is based upon a careful analysis of them. The group comprises fifteen cases, to all of which the term 'retinitis hæmorrhagica' is applicable. Of these, eleven occurred in men, and four in women. The youngest patient was 44, the oldest 72, and seven were over 60. Gout had been positively present in six, and was strongly probable in four or five others. In one case the gout was complicated, and probably in part produced by lead-poisoning, and this is the only instance in which the urine contained much albumen. In another, in which no history of gout was obtained, the patient, a man aged 67, had diabetes, which was probably the cause of the retinitis. In ten only one eye was affected, and in five both. With one exception (the case quoted from Jaeger), in all the cases in which the conditions were unusually well characterised (large flame-shaped hæmorrhages &c.), only one eye was attacked. In about one-third of the cases albumen was found in the urine, but it was usually a mere trace, and only present occasionally. None of the patients had any dropsical symptoms. In four, including the case of diabetes, white deposits characteristic of renal retinitis were present in small quantity, and in all these albumen was found in the urine. In three or four it is stated that the hæmorrhages although numerous were not flame-shaped, and all of these were cases in which both eyes were affected.

It must be freely granted that this group has been constructed somewhat arbitrarily, and that retinitis hæmorrhagica is a malady the boundaries of which are very indefinite. Thus I have excluded all slight cases and taken only those in which the hæmorrhages were very numerous. It will be obvious from what has been said that it is impossible to

separate it abruptly from the forms of retinitis, attended with hæmorrhages, which occur in kidney-disease and in diabetes. Indeed it would probably be quite contrary to fact to attempt to accomplish any such separation, for in the cases of gout without albuminuria, we must still suspect that kidney disease in some stage is present. Still, however, we are, I think, entitled to believe that the state of things is different in very important respects between the common renal cases, in which both eyes are almost invariably affected together, the white deposits always present, and the hæmorrhages usually few, and the typical hæmorrhagic retinitis, in which the deposits are absent, the hæmorrhages abundant and flame-shaped, and but one eye affected.

We must bear in mind the possible influence of heart-disease (hypertrophy), of diseased arteries (senile or other), and of accidental strains on the blood-vessels. In one case the attack occurred in stooping, in another during violent coughing, and in two others the patient went to bed well and awoke almost blind in one eye. I cannot say much as to the state of the heart, for it was not examined in nearly all the cases. In several there seemed no proof of hypertrophy, but in one which ended fatally it was very large. In this instance the patient, a lady, had numerous small hæmorrhages first in one eye and then in the other. Her urine contained constantly a trace of albumen, but there were no white deposits in the retina. She had had gout slightly and inherited it. She at length died from a large hæmorrhage into the corpus striatum. Her kidneys were hard, red and granular, and their pelves contained much lithic acid sand. This case was, however, by no means a very typical one of the class, for the blood-spots were small, not flame-shaped, and unattended by swelling of the disc. There was no venous engorgement nor any sudden attack. It is quite possible that the hæmorrhages may have been arterial or capillary, and may have been due to the heart-disease.

In conclusion I may, perhaps, be permitted to ask the expression of the Society's opinion on the following points:—

I. How far may we adopt it as a rough rule in diagnosis that when very numerous retinal hæmorrhages are discovered with or without œdema, but without white deposits, gout is to be suspected? I have already sufficiently indicated my own opinion.

II. When the hæmorrhagic retinitis is recognised as in connection with gout, what are we to believe as to the precise

links of connection? It seems improbable that the escape of blood is due simply to altered conditions of the blood itself, since the attack is often sudden and often confined to one eye. It may be due to arterial disease and especially to the formation of aneurysms on the smaller vessels, such as have been demonstrated microscopically by many observers, or it may be due *to venous obstruction either from pressure upon the trunk by external swelling or deposit, or the formation of a thrombus within its interior.*

The suggestion that the phenomena of hæmorrhagic retinitis are often due to venous obstruction rather than to arterial disease seems to me to be supported by the general facts of the disease. We know that venous thrombosis is common in gout, and that when a vein trunk is obstructed ecchymoses are liable to occur. In many cases the ophthalmoscope shows the veins greatly distended, and the current within them almost if not wholly arrested. In one or two instances I have thought that coagulation could be demonstrated. The swelling of the retina near the disc would be well explained in the thrombosis theory. The sudden development of the condition would also be well explained in this manner, whilst it is very difficult in the theory of arterial disease.

XXXIII.—*A Case of Rapid Effusion of Bloody Fluid into the Right Pleural Cavity at the age of* 76. *Paracentesis: Recovery.* By W. H. Broadbent, M.D. *Read March* 22, 1878.

On May 16 a gentleman, æt. 76, came to my consulting-room for advice regarding severe attacks of dyspnœa which had followed exertion on several occasions during the previous week.

He had suffered from bronchitis during the winter but had enjoyed good health, and for his years was unusually vigorous. During the previous ten days he had several times been seized with shortness of breath after exertion, which had gone much beyond being out of wind, and on the evening before he had had a very severe paroxysm in which he had been compelled to sit down for some time gasping for breath.

It was expected that the cause of these attacks would be found in the heart, but a most careful examination revealed nothing abnormal in this organ. When the rest of the chest was examined it was found that the right pleural

cavity contained fluid which gave dulness on percussion to the level of the nipple in front and to mid-scapula behind. The pulse was frequent, hard, and long. The patient, who was on his way to his office, was sent back to his house, ordered to keep his room, and to take blue-pill and rhubarb as an aperient.

Next day, though he had protested against being confined to his room, he had been glad to remain in bed, dyspnœa having been induced by very slight exertion. The fluid had by this time increased so much that only a small patch below the clavicle was resonant, and over this resonant area the percussion note had the peculiar tympanitic character which is given by compression of the lung. The respiratory murmur was absent over the area of dulness; there was tubular breath-sound between the scapula and spine; vocal vibration was extinguished.

On the 18th the right side of the chest was quite full of fluid, there was dulness everywhere, the diaphragm was carried downwards and the mediastinum slightly displaced. The least movement now brought on a paroxysm of breathlessness, and there was much respiratory distress and anxiety of countenance during repose.

The opinion was now given that paracentesis was absolutely necessary, and that it could not safely be put off beyond the next day. At the same time Sir William Jenner was asked to see the case.

On September 19 Sir William Jenner saw the patient with Mr. Meehan, the family medical attendant, and myself. He could not now turn in bed without great distress. Sir William Jenner found the right pleural cavity full of fluid and the heart displaced considerably to the left, and concurred in the opinion that the fluid should be drawn off without loss of time.

This was done at once by Mr. Meehan and myself by means of the bottle-aspirator, a rather small cannula being used and very gentle suction employed. The first fluid which entered the receiver was seen to be bloody—not tinged merely, but almost of the colour of blood itself—and it retained this character throughout the operation. The quantity withdrawn was exactly two quarts; there was a considerable portion left behind, and more might have been removed without giving pain or causing distress. It was considered prudent, however, to stop at this point; sensible relief had been afforded, the heart had receded, resonance

had returned over a considerable area, and it was thought that as there had been such free effusion of blood, this might easily be again induced and that the fluid abstracted might be replaced by blood.

Very little cough was excited by the operation. The patient was not made to sit up, and indeed would have been unable to do so. He was turned on his left side while the puncture was made (in the eighth space below the angle of the scapula) and then replaced on his back, or nearly so, while the fluid was flowing.

When the fluid was examined it was found to have deposited a layer of blood-corpuscles about an inch thick, the supernatant fluid still retaining its deep red colour. This large amount of blood made the prognosis very doubtful, especially when the patient's age and the increasing liability to malignant disease in advanced life were taken into consideration.

Next day the temperature was high, 102°, and the patient was weary and depressed, but there was no perceptible increase in the amount of fluid in the chest. Day by day for a week or more this was all that could be said; then it became evident that absorption of the fluid left behind was taking place, and this proceeded gradually till it was entirely removed. The patient was able to leave town at the end of June, and he has since regained strength so far as to resume his official duties.

There are several points in this case worthy of remark.

1. *The age of the patient.*—Effusion into the pleural cavity is common late in life, but as comparatively few men reach 76, it must be rarely that paracentesis of the chest is required at this age. I have previously had a case at the age of 73, in which recovery followed.

I have always considered advanced age a reason for resorting to paracentesis early in cases of large effusion into the pleural cavity. The probability of resorption is diminished and the process is slow, while the reserve of strength to resist a long illness must be smaller than in the young. The structures also have lost pliability and elasticity, and will not yield readily to distension, which increases the distress and danger, while if the lung is bound down by adhesions, the chest walls cannot fall in.

2. *The rapidity of the effusion.*—The rate of accumulation was in my experience unparalleled. On Wednesday the line of dulness was at the level of the nipple all round the

chest in the sitting posture; on Friday the pleural cavity was full, and there was dulness above and below the clavicle. When the fluid was found to contain a large amount of blood the rapidity with which it was poured out was taken to confirm the suspicion of malignancy which this suggested. I have not had an opportunity of re-examining the patient lately, but the completeness of the recovery almost puts malignant disease out of the question, and both the rapid effusion and the sanguineous character of the fluid must remain without explanation, except that the two facts depend one on the other, unless it may be supposed that the exertion which had given rise to so serious a paroxysm of dyspnœa on the evening before I first saw the patient had in some way caused it.

3. *The large amount of blood.*—This has already been mentioned. As is well known it is usually indicative of malignant disease. I have never previously seen the proportion of blood present in this instance without a fatal termination, and, when an examination has been made, malignant disease. Fluid from the pleural cavity may be deeply tinged with blood in kidney-disease, but not to the same degree. The large amount of blood was probably connected with the rapidity of the effusion and may in some sort explain it.

Postscript.—The subsequent history of this case shows that notwithstanding the recovery after paracentesis there was almost certainly malignant disease of the lung. In January 1878 the patient had slight cough, and complained of a distressing sensation in the abdomen after food, which he described as 'a panting.' The cough soon ceased, but there was gradual loss of flesh and strength with increasing shortness of breath. For some time the physical signs were simply such as might have been caused by adhesions and imperfect reabsorption of the solid matter left behind by the effusion, viz., impaired resonance over the lower part of the right chest, especially posteriorly, restricted respiratory movement, and imperfect entry of air. Gradually, however, there supervened distinct retraction of the lower right ribs, the diaphragm on the right side being fixed and the heart dragged to this side; the dulness became absolute but did not extend, while the resonance over the front of the chest from the fifth rib upwards acquired a remarkable tympanitic character; over resonant and non-resonant areas alike there was loud tubular breathing. Death occurred rather suddenly on May 8; no post-mortem examination was permitted.

XXXIV.—*A Case of Right Pleurisy with Effusion. Sudden Death.* By W. H. Broadbent, M.D. *Read March* 22, 1878.

THE following case is reported to the Society as an illustration of the fact that sudden death may be caused by effusion into the pleural cavity independently of paracentesis. The occurrence of cases such as those communicated during the last session by Dr. Cayley and myself, in which tapping the chest was followed by a suddenly fatal issue, has been made the occasion of remarks against the operation. The sudden death has been attributed entirely to the removal of the fluid, and it has been forgotten or denied that this was liable to occur as a result of its presence in the pleural cavity.

I was requested by Mr. Wigmore on September 28, 1877, to see with him a gentleman, æt. 24, suffering from pleurisy with effusion. He came of a very phthisical family. He had been married in June, and since then he had spent much time on the Thames, boating, and often camping out. About the end of August he had had pain in the right side, but had continued to play cricket, row, &c., for a fortnight, when he began to suffer from shortness of breath, and had to give up violent exercise.

So late as September 24, however, he had been out, and had climbed up a long staircase. From this time he had kept his room, and had placed himself under the care of Mr. Wigmore, who found the usual signs of fluid effusion in large quantity in the right pleural cavity.

This increased rapidly, and when I saw the case with Mr. Wigmore on September 28, the dulness on percussion extended over the entire right half of the chest, and passed the middle line of the upper sternum. The heart was displaced to the left of the normal situation, but the sounds were well heard to the right of the sternum. Posteriorly respiratory murmur was audible along the right of the spine, conducted no doubt from the other lung, in which it was exaggerated.

The breathing was frequent and attended with effort, and there was an expression of distress in the face, but there had been no paroxysm of dyspnœa. The patient had been able to lie down at night, and when we saw him was lying on a couch in his dressing gown. The pulse was good.

On consultation we decided to propose paracentesis for

the next day. The patient assented, only after considerable hesitation, on the ground that there was nothing urgent in his symptoms. We insisted, however, on the necessity of removing the fluid without loss of time, and 4 p.m. on the following day was fixed as the hour for the operation.

The patient overcame his apprehension about the operation, was cheerful during the evening, and had a good night; he woke at about 6 a.m., feeling comfortable, but immediately afterwards was seized with dyspnœa of a most severe character. From panic, or from some other cause, there was delay in calling Mr. Wigmore to his assistance, and before he reached him (about 10 a.m.) the patient was dead.

There was nothing in his condition a few hours before which threatened this terrible result. The symptoms were of the most ordinary kind, and there had not been a single paroxysm of dyspnœa. We urged removal of the fluid without loss of time, not from apprehension of any immediate danger, but because it was increasing rather rapidly, and dyspnœa would, we thought, speedily come on, and the phthisical family history led us to fear that the effusion, if allowed to remain, might give rise to disease of the lung.

The cause of death was probably thrombosis in the veins of the compressed lung, extending to the left auricle, but the opportunity was not afforded us of ascertaining definitely what was the immediate cause of the dyspnœa by post-mortem examination.

XXXV.—*A Case of Bilateral Paralysis of the Posterior Crico-Arytænoid Muscles.* By Felix Semon, M.D. *Read April* 12, 1878.

THE number of cases of bilateral paralysis of the musculi crico-arytænoidei postici recorded is extremely small. Professor v. Ziemssen, who has written on the subject in his 'Cyclopædia'* makes out only nine cases altogether, of which only one has been observed in this country.

It is true that this list is not at all complete, for he has made a selection from those cases only of which a detailed description has been published, omitting all cases mentioned incidentally: but even if we add to his list the cases observed by Riegel, Tobold, Fränkel, Guttmann, and the six cases

* V. Ziemssen, 'Cyclopædia' (German Edition), vol. iv. p. 463.

observed in Dr. Morell Mackenzie's clinic in the Hospital for Diseases of the Throat, the total number will hardly amount to more than thirty-five cases.

This very small number might seem at first nearly incomprehensible, when we consider the frequency of other laryngeal paralyses, but it finds its natural explanation in the anatomical conditions of the larynx.

If it be borne in mind that with the exception of the crico-thyroid all the laryngeal muscles receive their nervous supply from the recurrent nerve, it must at once become clear that it is only under exceptional circumstances, that just *those* fibres of the recurrent nerve which supply the crico-arytænoidei postici, and those fibres *alone*, will be paralysed. On the other hand, it will be seen that it is just in this *uncomplicated, bilateral* paralysis that the grave symptoms I am about to describe originate, and that *uni*-lateral paralysis of a crico-thyroideus posticus, as well as the complication of *bi*-lateral with paralysis of their antagonists, are harmless affections when compared with uncomplicated bilateral paralysis. It is much more the great importance to health and life than the rarity of the affection which has induced me to bring this case before the Society.

This importance can be very easily shown. We distinguish two groups of laryngeal muscles: adductors and abductors. To the former group belong the muscles, which approximate and stretch the vocal cords (the crico-thyroidei, thyreo-arytænoidei, crico-arytænoidei laterales et interarytænoidei); to the second group only the crico-arytænoidei postici, which separate the vocal cords by turning the arytænoid cartilages outwards. But although the action of these two groups is strictly opposed to each other, they are, under normal conditions, not to be considered as antagonists in the proper physiological sense, inasmuch as they serve entirely different purposes. The adductors are quite inactive during the process of respiration, and only begin to work if phonation is intended; the crico-arytænoidei postici, on the other hand, have nothing whatever to do with phonation, but are permanently engaged in keeping up the possibility of respiration.

This has been proved both by experiment and by pathological observation. If the size of the glottis, which we see under normal circumstances on a quietly-breathing healthy person, were the results of an equilibrium between antagonistic forces, viz. the adductors and abductors, it ought to

remain the same when both of them were *equally* deprived of their power, as is the case in complete paralysis of the nervous supply of the larynx, or in the dead body.

But it is well known that the laryngoscopic examination of the dead larynx shows a very different aspect. The rima glottidis appears much smaller than in the living person, the posterior edges of the vocal cords being nearer the median line. This characteristic position has been called the 'cadaveric' position of the vocal cords. It is to be seen not only in the dead, but also in the living subject, in cases of complete paralysis of the laryngeal nerves, when both vocal cords remain immovable in the cadaveric position. It has also been produced artificially by division of the recurrent nerve in animals. It might be mentioned that the consequences of this state of things are: firstly, complete loss of voice, because the approximation of the vocal cords has been rendered impossible; secondly, more or less marked dyspnœa after exertion, because the cadaveric calibre of the glottis, although sufficient for the entry of air during quiet respiration, does not admit the entry of an augmented quantity such as required after exertion.

Such being the conditions in complete paralysis and in the dead body, we are entitled to draw the conclusion that the greater size of the glottis seen in the healthy subject is solely due to the permanently dilating force of the crico-arytænoidei postici. The proof that the adductors do in no way counteract this activity is given by the fact that the size of the rima glottidis does not increase even in cases of long-standing paralysis of the adductors. It could be, or, better, it must be concluded from these facts, that the bilateral paralysis of the crico-arytænoidei postici is a comparatively innocent affection, for what could be its consequences? Of course simply a reduction in the size of the glottis to the cadaveric position of the vocal cords, while in consequence of the integrity of the adductors, the power of phonation is not involved. In other words, the bilateral paralysis of the abductors would only show one-half of the symptoms presented by the complete paralysis of all the muscles of the larynx. This conclusion is quite logical, and there is no doubt that the symptoms of the disease in its earlier stages completely correspond with this theoretical reasoning. Later on, however, another factor, not yet mentioned, makes its appearance, and to this, and not to the primary paralysis, the grave and dangerous consequences

which accompany the later stages of the disease are to be attributed. This factor is *the paralytic contraction of the antagonists.* It is well known that such contraction of the antagonists of paralyzed muscles not unfrequently occurs in other parts of the body. As causes of their origin I might mention traumatic paralysis, spinal paralysis of children, diseases of the joints, ligaments, articular extremities of the bones, lead-poisoning, use or non-use of certain parts on one side of the body only, &c., &c.

Their origin has been well described by Professor Erb.* He says—'The mode of origin of these contractions is a repeated or persistent mechanical approximation of the points of attachment of the muscles. This might be produced in different ways, and often it is occasioned by the active voluntary contraction of the antagonists of the paralyzed muscles, which shorten themselves with each voluntary effort, the paralyzed muscles then being incapable of again effecting their extension. So the shortening becomes permanent.' This description is perfectly applicable to the disease in question.

The abductors of the vocal cords being paralyzed, the adductors, which shorten themselves as often as phonation is intended, finally, as no counter-extension of the cords is effected, remain in this state of permanent shortening. It generally takes rather a long time after the first signs of the paralysis before symptoms of the secondary affection appear, and even then they develop themselves slowly and gradually, but the final effect, unless the paralysis be not a complete one, invariably must be the same: gradual, irresistible narrowing of the vocal cords, from the cadaveric position occupied in the beginning, until finally they nearly touch each other in the median line.

I need not say, that long before this highest degree of stenosis of the air-passages has been reached, the grave physiological change manifests itself by the symptom which one would expect: of gradually-increasing dyspnœa. It is this dyspnœa which is so characteristic of the disease that Riegel seems to me quite justified in saying † that even without the laryngoscope one can diagnosticate with a certain amount of probability paralysis of the crico-arytænoidei postici if this dyspnœa be present.

* Ziemssen, 'Cyclopædia,' vol. xi. p. 378.

† Riegel, Ueber respiratorische Paralysen in Volkmann's Klinischen Vortraegen, Nro 95, p. 771 ff.

Its peculiarity consists in the fact *that it is exclusively an inspiratory one, while expiration is effected without difficulty, and the voice remains quite unimpaired.* As soon as the narrowing of the glottis becomes so developed that the quantity of the air entering is no longer equal to the quantity demanded by the expansion of the thorax, the patient at first tries to compensate the difference by *prolongation* of the inspiration.

As the disease progresses, and the glottis becomes smaller, this compensation is not sufficient, and all the auxiliary muscles of inspiration come into action. But in higher degrees of the disease even this does not suffice to draw as much air through the narrowed passage as is required, and then we have before us the painful picture of a permanent struggle for life. In spite of the patient's desperate efforts, and his prolonged sighing, or even howling inspiration, he cannot get the quantity of air corresponding to the expansion of the thorax. Consequently the air below the stenosis becomes, during this expansion, rarefied, and this manifests itself by the recession of the less resistant parts of the thorax, viz., the intercostal spaces and the epigastrium during inspiration. On the other hand, the difference between external and internal pressure is shown by the very strong respiratory movements of the larynx, and by still more marked narrowing of the glottis during *in*spiration, the vocal cords being probably sucked to each other in consequence of the augmentation of the negative pressure. Thirdly, the insufficient change of gases in the lungs, and the overloading of the blood with carbonic acid, is illustrated by the livid colour of the patient and the coldness of his limbs. The incessant fear of being suddenly suffocated gives in these stages a very mournful and melancholy expression to the poor patients.

In complete opposition to this highly impaired inspiration, expiration is effected so easily and quickly that on the whole, in spite of the prolonged inspiration, respiration is not much slower.

I cannot help confessing that this *absolute* freedom of expiration, even in the last stages, when the glottis is reduced to a linear split, seems to me somewhat astonishing. Of course the causes which produce dyspnœa during the inspiration are absent, and in consequence of the diminished entry of air during *in*spiration, less air also will be *ex*pired; but anyone can convince himself so easily by physiological experiments that the passage of air through a very narrow

opening is accompanied by some difficulty, and at any rate by the production of a sound, however small the expelling force might be, that the total absence of both during expiration, even in the highest degrees of the disease under consideration, seems somewhat strange. The fact of this absence, however, cannot be denied.

No explanation is required for the complete integrity of the voice in these cases, as there is nothing which could prevent the muscles of phonation from acting in the normal way; but it is this *coincidence of unimpaired voice with strong inspiratory dyspnœa and free expiration*, which forms the most characteristic feature of the disease. It is clear from the foregoing that this dyspnœa will appear in earlier stages if there be an incidental narrowing of the glottis, such as produced by catarrhal swelling of the vocal cords, or if, in consequence of mental or physical exertion, cough, &c., a greater quantity of air be required for inspiratory purposes.

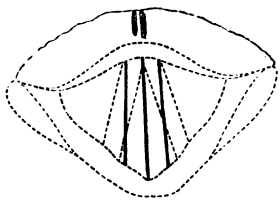
Before proceeding any further, I am able to show the Society, in a living specimen of bilateral paralysis, &c., how the objective facts agree with the above theoretical reasoning.

John Keyte, Inspector of the District Railway, æt. 32, enjoyed thoroughly good health until two years ago. Having been subject to several severe colds, contracted in the exercise of his duty, he was one day suddenly seized, no distinct cause being present, by an attack of violent cough, followed by slight dyspnœa. This, however, disappeared quickly at that time, but from this day it has appeared more and more frequently, especially after taking any fluids. One attack, soon after the beginning, ended in complete unconsciousness. The single attacks were not always equally strong, but on the whole a slow but very constant progress was to be observed, the breathing being now somewhat impaired permanently. It is said to be better if the weather be dry and clear. The patient has not remarked that the attacks were more frequent after exertion, but cough, with consequent deep inspiration, is sure to bring on a more or less severe attack of dyspnœa.

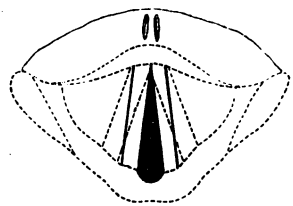
The patient has lost his appetite since the beginning of the disease, and has lost since three stones in weight. He and his family have remarked that the colour of his face has become much paler. About nine months ago a certain sleepiness and drowsiness, formerly unknown to him, are said to have set in. For six weeks he has had, in both legs,

especially in the left, a feeling of weakness, itching, fibrillar convulsions, and, in the left alone, occasional cramp of the calf, and rapidly increasing numbness. Sometimes slight incontinence of urine is said to be present.

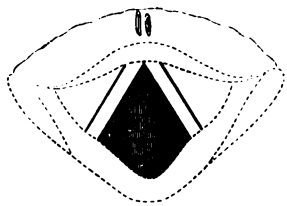
The patient is a tall, well-built man of a healthy complexion. There is slight ptosis of the left eyelid, the left pupil smaller than the right; the left aural angulus a little lower than the right, the left naso-labial fold more distinctly visible than the right. There is slight dyspnœa only when the patient breathes quietly, but after talking, and especially



Glottis during phonation in a healthy person.



Glottis during deep inspiration in a healthy person.



Diagrammatic drawing, showing the size of the glottis in a case of paralysis of the posterior crico-arytænoid muscles during deep inspiration.

after coughing, several long, deep, sighing inspirations ensue, when all the auxiliary muscles come into action. Expiration is easily effected; the voice nearly natural, only a little hoarse, and its timbre a little oppressed. Pharynx normal; uvula in the median line. Larynx well formed; its sensibility not altered; vocal cords a little congested and thickened. Rima glottidis much smaller than normal. There is complete approximation of the vocal cords during phonation. If deep inspiration be intended, the cords separate only a very little from each other, and return at once to their former close approximation. The act of separation

is effected not by a continuous movement, but by several oscillations.

Lungs and heart healthy. Action of the heart somewhat quickened. The first sound over the apex of a broken character.

The patient's gait is rather uncertain; while walking or standing with both eyes closed, he begins to shake, as if about to fall. This symptom is now making rather rapid progress. The sensibility in both legs is but very little lessened, and equal on both sides; the patient localises very well. Urine normal.

This is the last in a series of six cases which I have seen within the past two years at the hospital.*

It is not my intention to give in this paper a complete and elaborate monograph of the disease, its diagnosis, differential diagnosis, prognosis, ætiology, complications, and treatment, for these points have been treated so exhaustively by Riegel and v. Ziemssen, that without a very great number of *new* observations, any attempt in this line would be merely a repetition of their words.

But I might be allowed to make a few general remarks on the points just mentioned, inasmuch as the number of cases on which my observations are based is a comparatively large one.

These remarks will be limited to the following points:

1. *The age and sex of the patients.* All our six cases were *men*, and their ages between 30 and 60.

2. *The duration of the disease.* With one exception only the disease had lasted from eight months to two years, before the patients came to the hospital. But the progress of the disease did *not* in all cases correspond with its duration; two men were admitted in a desperate state, the disease having lasted in one case eight months, in the other scarcely one year, while the patient shown to-night and another observed last year were comparatively but little affected on their admission, although at that time they had already suffered two years. The exception above mentioned is doubtless a case of *functional* paralysis of the posterior crico-arytænoids, occurring in a man 32 years of age. Similar lesions, which appeared and disappeared suddenly, having been observed before in other organs (*e.g.* the eyes) he was seized one night with paralysis of the abductors, which could not be mistaken for spasm of the glottis, as the

* Three of them will be published in extenso by Dr. Morell Mackenzie.

affection lasted for nearly two months without a free interval, and its laryngoscopic appearance was often observed by Dr. Mackenzie, myself, and others. Then it gradually disappeared, no medicine having been administered except bromide of potassium and mist. ferri et quin.

Similar cases have been of late observed by Fränkel and Guttmann,* and it seems now quite established, that there exists a functional paralysis of the *ab*ductors similar to the functional paralysis of the *ad*ductors so often seen in hysterical women.

3. *Differential diagnosis.*—The diagnosis did not offer any difficulty in any of these six cases. The only diseases for which the disease under consideration might be mistaken are: firstly, spasm of the glottis, secondly, ankylosis of both arytænoid cartilages. With regard to the first, there can be only a momentary doubt if one is called in to a patient who is suffering under an attack of inspiratory dyspnœa, and not able to state anything about the history of his disease. Later on, however, the sudden origin, the intensity of the disease at its very beginning, and above all the free intervals will easily distinguish the spasm from the gradually but permanently increasing paralysis. On the other hand it will not be possible in many cases to distinguish during life between paralysis of the posterior crico-arytænoids and ankylosis of the arytænoid cartilages. Such ankylosis might be produced by injury, by syphilitic † or typhoid ‡ ulcers on the posterior wall of the cricoid cartilages or by perichondritis. Whether these affections lead to ankylosis, or to atrophy, or destruction of the nervous supply of the posterior crico-arytænoids—in both cases the result will be in one respect the same: atrophy of these muscles in consequence of their complete inactivity.

4. *Ætiology.*—This most important point having been up to this time one of the most obscure, has, I hope, gained some valuable contributions towards its explanation by our six observations.

Out of our six cases there originated:—one doubtless from functional disorder (above mentioned); one from compression of both recurrent nerves by firm connective tissue in a case of corbovinum, general arterio-sclerosis and enlargement of the first part of the aorta, chronic pneumonia,

* Berliner Klinische Wochenschrift, p. 140, No. 10, 1878.
† Sidlo's case, v. Ziemssen (German Edition), vol. iv. p. 472).
‡ Fränkel, l. c.

and enlargement of the bronchial glands. Post-mortem examination showed complete atrophy of both crico-arytænoidei postici, the trunk of the pneumogastric nerve being normal.—One certainly, one probably from catarrhal influences. One of these having died from pneumonia ten days after tracheotomy was performed, it was found at the post-mortem that both muscles and those fibres of the nerves which supply them, had undergone complete atrophy, the trunks of the nerves being normal. No reason for this atrophy could be detected. The history of the other case did not admit of any other origin than a purely catarrhal one. The man underwent at my urgent suggestion tracheotomy *in time*, and left the hospital much improved. Three months later I saw him again. The disease had not made much progress, and he felt quite well owing to his constantly wearing the tube.—One from perichondritis of the cricoid cartilage. The man came into the hospital in a dying state. Having ascertained by a laryngoscopic examination that there was the highest degree of stenosis glottidis, I at once proceeded with tracheotomy, but although it was performed as quickly as possible, the man, who was asphyxiated when the operation began, died about two minutes after its completion, all efforts to restore him to life being in vain. I do not hesitate a moment in attributing this death (no anæsthetic having been administered) to blood-poisoning through overloading of the blood with carbonic acid. The blood which came from the wound after the *first* incision was quite black, and at the same time it was impossible to stop the hæmorrhage following the *first* cut, although no large vessel was injured. This was no doubt due to the overflowing of the capillary system with blood, owing to the insufficient circulation. At the post-mortem it was found that all the organs of the body were quite healthy, and that there was only an abscess in the posterior wall of the cricoid cartilage which had led to the destruction of the nervous supply of the abductors, which were considerably atrophied. There was a completely necrosed piece of the cartilage in the cavity of the abscess. Later on I learned from the relations of the deceased that the disease had begun with gradually increasing dyspnœa and difficulty of swallowing, and that no other disease had preceded it. There was no trace of syphilis anywhere.

The last case observed by me is that shown to-night. In this patient the ætiology is of special interest. I do not deny that I looked upon the other nervous symptoms

mentioned before as a very interesting but merely *accidental* coincidence with the paralysis; for the long time which has elapsed between the appearance of the latter and that of the other nervous symptoms, as well as the integrity of the other organs supplied by the pneumogastric nerve, seemed to me to prove that there was no organic connection between the two groups of symptoms, and I am inclined to maintain this view even now.* But Dr. Hughlings Jackson, who has most kindly seen the patient with me, and who has observed before † some cases of unilateral paralysis of an abductor in consequence of *cerebral disorder*, believes that both these arguments are not sufficient to exclude such a connection. He is certainly of opinion that this connection is present in this case, and that all the symptoms seen in the patient are most probably the result of a wasting process in the medulla oblongata. I ought to mention here that one case of bilateral paralysis of the posterior crico-arytænoids has been published by Penzoldt,‡ in which the result of the post-mortem did not leave any doubt as to the disease being produced by central disorder.§

5. *Prognosis.*—The prognosis seems to be favourable in cases of functional paralysis (the same observed by Fränkel and Guttmann), in all other cases at least very doubtful. There may be an arrest of the process at a certain point, but we never saw (with the above exception) a convalescence.

6. *Treatment.*—With respect to this important question my experience leads me to the following results:—

(*a.*) In functional paralysis no special treatment is wanted. In spite of the grave symptoms, improvement and complete restoration to health, without the application of electricity, &c., has been observed in our case as well as in the cases of Guttmann, Fränkel, and v. Ziemssen.

(*b.*) In recent cases of purely neuropathic character the direct application of electricity to the paralyzed muscles is reported to have been successful in one of v. Ziemssen's cases. *All* other observers, as well as I, have not seen any

* Conf. 'Lancet,' 1878, No. 16, p. 584, and No. 17, p. 630.

† 'London Hospital Reports,' vol. i. 1864, pp. 361–374; vol. iv. 1867–68, pp. 314–321.

‡ 'Deutsches Archiv für klinische Medicin, vol. xiii. pp. 111–116; see also v. Ziemssen, l. c. p. 465.

§ On the other hand a case of bilateral paralysis of the abductors, in many respects closely resembling the case under consideration, has been observed by Drs. Hughlings Jackson and Morell Mackenzie ('Medical Times and Gazette,' 1866, No. 859, p. 638), in which in spite of several other nervous symptoms, apparently of cerebral origin, the post-mortem examination showed complete integrity of the brain and the medulla oblongata.

improvement under this treatment. Notwithstanding, it will be worth trying in such cases, because all other methods (constitutional treatment, iodide of potassium, iron, subcutaneous injections of strychnia, &c.), have proved to be complete failures.* Of course the *direct* application to the paralysed muscles from the posterior surface of the cricoid cartilage with the aid of Mackenzie's electrode or with his new instrument (a small spade instead of the metallic globe on the top of the electrode) must be *exclusively* adopted. The *percutaneous* application would most certainly lead to a still greater narrowing of the glottis, because not only the paralysed fibres of the vagus will be irritated by the electric current, but the healthy ones also, the consequence of which would be the still greater contraction of the adductors.

(*c.*) In higher degrees of the neuropathic, and in all other forms of the paralysis which have led to a destruction or atrophy of the fibres supplying the posterior crico-arytænoids, there remains one remedy only: tracheotomy.

I am the most decided advocate of its *early* performance; I feel sure that the unfavourable results obtained in two of our cases and mentioned in several of the instances reported by other observers, are solely due to the fact that the operations were performed too late, when the carbonization of the blood had gone already too far. Everybody knows how much better the final results of tracheotomy in diphtheria, and other diseases in which this carbonization is to be feared, are, when the operation is *timely* performed, than when it is left to the last minute. The same reasons are present in the disease under consideration. Tracheotomy being performed in time the patient afterwards will enjoy good health with the only disagreeable modification that he will probably have to wear his tube permanently; while if it be postponed to the last, in consequence of the doctor's or the patient's vain hopes of an amelioration, the prospects of recovery are comparatively unfavourable.

I cannot conclude this paper without expressing my very best thanks to our President, to Doctor Hughlings Jackson, Dr. Morell Mackenzie, and Dr. De Havilland Hall, for the very kind and valuable assistance they have given me in different ways.

* The patient has up to the present time (August 1878) been treated with daily direct application of electricity. A slight improvement seems to have taken place; at any rate the disease has not made further progress.

XXXVI.—*Cases of Hammer Toes showing the relation of this condition to Spinal Mischief.* By T. W. Nunn. *Read April* 12, 1878.

THE casts on the table were taken from two patients suffering from different forms of disease, but which had something, nevertheless, in common. The one is of the foot of a strong-built male adult, who was admitted into the Middlesex Hospital on account of lameness, arising from suppuration in the sole of the right foot. A close inspection showed that the suppuration proceeded from the acute inflammation of a bursa, which had become prominently developed over the plantar aspect of the heads of the third and fourth metatarsal bones. On examining the position of the four outer toes it was found, as shown by the cast, that the phalanges were retracted, that is to say, were permanently and abnormally *extended* on the dorsum.

The other casts are from the feet of a lady, where the same excessive and permanent extension of the toes of the right foot is seen. In this patient, however, the lameness was not caused by inflammatory mischief on the plantar aspect of the foot, as I will presently show.

In the first case the patient alleges that his lameness followed an injury to the instep by the falling upon it of a heavy weight some time previously.

On his admission into the hospital, December 29, 1877, there was, it is true, some redness and swelling of the dorsum of the foot, but I have the suspicion that the displacement of the phalanges, if I may call it such, commenced long before the receipt of the injury, and that the bursa which suppurated had its origin at an almost equal distance of time.

On viewing the cast it is obvious that the foot, with the exception of the great toe, as an organ of progression really ended at the line of the metatarso-phalangeal articulations. The patient thus, *walked on the heads of the metatarsal bones* in place of walking on his distal phalanges, consequently, the unprovided-for pressure over the cartilage-covered articular heads of the metatarsal bones caused what is, in point of fact, a plantar bunion—a bunion, which eventually suppurated. The following is a quotation from the Hospital Register giving 'state on admission and history.'

'J. C. æt. 39. Has a small orifice in the sole of the foot over the head of a metatarsal bone. A probe can be passed into

a sinus leading towards the great toe and backwards towards the centre of the sole, but nowhere touching carious bone. Six and a half years since had the foot crushed by the cog-wheel of a mowing machine which fell on the instep; was laid up for a week. Four years since a gathering came on the dorsum of the foot and also on the sole; was in St. George's Hospital five weeks, left with the foot healed; but it broke out again in a fortnight, and the present sinus then formed and has been mostly open ever since, with occasional recurrent attacks of inflammation—no bone exfoliated.'

The progress of the case, as far as regards the bunion, was satisfactory: the inflammation subsided, and the patient was discharged able to walk February 19, 1878. The cast was taken a short time before the patient left the hospital, and therefore the projection of the bunion is represented at its minimum.

It is fortunate when suppuration commencing in the complex system of tissues of the foot thus favourably terminates. A case came under my care in the Middlesex Hospital, where the mischief had spread, and it became necessary to remove the foot. I adopted, I may mention, the admirable operation known as Symes' amputation at the ankle-joint, and I had the satisfaction of seeing my quondam patient hard at work as a navvy some time afterwards. He, however, subsequently applied at the hospital with a threatening of the same kind of disease in his remaining foot, but as his application for treatment was made in good time, he escaped serious consequences.

In persons who have the phalanges retracted in the manner described, the rolling action of the foot in walking, spoken of by the physiologist, comes to an untimely end, ceasing at the heads of the metatarsal bones instead of continuing, as it ought normally, to the tips of the toes.

Regarding the second case—that of the female patient. In February 1872 this lady had a severe illness, which I assume to have been of the nature of gastro-enteritis; it followed the swallowing an irritant, in the shape of lotion, by mistake. From the following July to March of the next year, 1873, she was tormented by pains described as intensely burning, aggravated by occasional pangs of a more distinctly neuralgic nature. In the January of that year, 1873, the patient began to feel pain in the back, and found that she was unable to support herself either in the sitting or standing position, and by the middle of the year, that is to say in June, she found,

as she describes it, 'her body forming two angles'—more correctly speaking, a condition of marked *lordosis* was established, the curvature of the spine forwards being to such an extent that the patient's height was reduced, she states, to the extent of four inches. The patient was seen by me in 1874 respecting the condition of the feet, especially as to the retraction of the toes.

On finding that there was lordosis, and that the right inferior extremity was shrunken, I suggested the adoption of such measures as would tend to correct the spinal deviation, especially the use of the ordinary spinal support consisting of side crutches with pelvic band. The patient has been seen by me at intervals since the date just named; she has been diligently shampooed, and has had baths and douches, and exercises, and has had the Faradaic current used to the muscles of the leg. Her general condition has greatly improved, so that she has been able to take fairly long walks, and she has nearly regained her normal stature. But there remains the acquired deformity of the right foot, namely, retraction of the phalanges on to the dorsum, as shown in the cast; this causes great inconvenience by exposing the sensitive bursa over the proximal phalangeal articulation (the first joint of the toes) to pressure from the upper leather of the shoe.

The question arises—What is the nature of the retraction of the phalanges in such cases? I have here some photographs showing a similar position of the phalanges in the hand, after accidental division of the ulnar nerve at or near the wrist. These photographs I exhibited at the Pathological Society to illustrate the result of the paralysis of the interossei muscles, which are supplied, or, as the French say, are *animated* by the ulnar nerve. M. Duchenne, as is well known, has particularly described this acquired deformity of the hand which gives to the fingers a claw-like aspect.

It appears to me that at least one factor in the deformity now under consideration is a disturbance in the innervation or of the nutrition of the interossei of the foot. That these muscles are often found on dissection to be very small and fatty is a circumstance that must have been forced under the attention of anyone who has been long engaged in teaching anatomy in the dissecting-rooms. But whence arises this disturbance? In the case last described there can, I think, be no doubt that the source of the mischief in the foot was spinal; it may be assumed that the stretching of the spinal

nerves and spinal cord on the one side of the curve, and the corresponding compression on the other, could not but have an influence over the functions of these structures; this supposition does not ignore the possibility of there having been sclerosis or some morbid change in the ganglionic cells or in other constituents of the cord; though such is rendered unlikely by the convalescence of the patient. I speak on this matter with diffidence, as I am probably in the presence of members of this Society whose knowledge of the intimate pathology of the nervous system is immeasurably greater than mine. The spinal source of the mischief is further shown by the shrinking which I have mentioned of the other muscles of the limb. A glance at the cast will also show to us there was a tendency to valgus from shortening of the gastrocnemius, and measurements around the calf and above the knee proved a considerable degree of atrophy of the muscles generally.

As regards the cause of the displacement of the phalanges in the first described case, that of the male patient in the Middlesex Hospital, I have to say that I could detect no curve of any sort in the spine. The man was particularly strongly built, but it may happen, I suggest, that during the rapid growth of the body at puberty some faulty development of the cord or of the nerves, or of the meninges, or of the vertebral column at the points of exit of the nerves, or of the sheaths of the nerve, may interfere with the *trophic* functions of the nerves, and that thus an atrophic contraction of parts of the muscular apparatus originates.

I therefore consider that the existence of the retraction of the phalanges (the condition known as hammer toes) constitutes a symptom which should direct the attention of the surgeon to the spine. The same may be said of *valgus*, or 'flat-foot.' Dr. Little, in his admirable contribution on Orthopædic Surgery, in vol. iii. of Holmes' 'System of Surgery,' says at p. 610: 'A slight degree of flatfoot is common in girls, especially of the upper and middle classes.' If in such cases the spine were examined I believe some degree of curvature, lateral or antero-posterior, would be discovered, for it is well known that in the sex and in the classes Dr. Little specifies, spinal curvature is very common.

It may be that the curving of the spine and the atrophy of the muscular system are only a 'part and parcel' of the same constitutional fault, but it will not be questioned that inattention to the condition of the spine where curvature

exists, cannot but aggravate the faulty innervation of affected muscles.

Faulty nutrition of single muscles or groups of muscles may take place, as is seen in other parts of the body, for example in strabismus, in writer's cramp, &c., and faulty nutrition of a single muscle in the leg I believe very frequently takes place. Ordinary bunion of the great toe is, I suggest, oftener due to an atrophic state of the extensor longus pollicis than to any effect of badly-shaped boots. I observed some years since, in Glasgow, where many of the poorer classes wear no shoes, that displacement of the great toe in grown-up women was not uncommon.

But cases occur where there is lateral curvature of the spine, and atrophy, to a greater or less degree, of the muscles of one of the lower limbs, with some of the *symptoms of morbus coxæ*, pain and lameness or awkwardness of gait. In such cases some assistance in prognosis may be gained by a careful inspection of the feet and shoes: where the toes are retracted it will be found that the sole of the shoe will be unduly worn away at the part corresponding to the heads of the metatarsal bones, and thus we may be able to arrive at the real *date* of the commencement of the affection. In conclusion I would add that spinal curvature not unfrequently either originates or becomes, from accidental causes, exaggerated in adult life, and being overlooked, the symptoms to which it may give rise are unintelligible and their treatment fails for want of a rational basis.

XXXVII.—*Cases of Epulis treated by Electrolysis.* By T. W. Nunn. *Read April* 12, 1878.

THE electrolytic treatment of tumours and morbid growths is of value in proportion to the inapplicability of other methods of removal; and although the process of electrolysis may be tedious, there are, nevertheless, compensating advantages attached to it.

Epulis is a disease to which electrolytic treatment is particularly applicable, as it replaces an operation which is more or less complicated and always attended with considerable hæmorrhage, to say nothing of obviating the concomitants of a wound that cannot from the circumstances of the case heal by first intention.

The following cases of epulis have come under my observation, and have been treated respectively by myself and by my friend Dr. McOscar of Argyll Street.

Case I.

A middle-aged lady was sent to me by Mr. Read of Finsbury, July 1872, on account of an epulis of the lower jaw, preventing the adaptation of artificial teeth; it was sensitive and troublesome by interfering with the closing of the jaws. The tumour was about the size of half a small walnut, and had sprung from the socket of a molar, the alveolar margins of which seemed to have been expanded by the pressure of the growth. The general colour of the tumour was florid and at points livid. The patient absolutely declined to permit any operation. I proposed the experiment of treatment by electrolysis. The result was completely satisfactory, the patient is now able to wear artificial teeth with comfort. The following facts must be set forth in respect of the treatment and progress of this case.

1. The number of sittings was large—20.
2. The number of cells used was seldom more than six, often only three.
3. The tumour, as before stated, was highly vascular; it bled freely on puncture.
4. The tendency to bleed diminished in a remarkable manner during the progress of the treatment.
5. The pain caused by the electrolytic current was in proportion to the number of cells employed.
6. The pain was *unbearable* when the needles touched the maxillary bone or periosteum. It seemed as though the galvanic action then affected the dental nerve, producing the agony of toothache.
7. Pain ceased immediately on withdrawal of the needles or the cutting off of the current.
8. As the tumour shrank the expanded alveolar border resumed the normal appearance.
9. An experimental injection of chloride of zinc into the tumour produced intense pain and subsequent irritation.

Case II.

The patient was first in the Middlesex Hospital, under the care of the late Mr. De Morgan, with epulis of the *lower* jaw.

That surgeon excised the growth by the ordinary operation. Epulis having declared itself in the upper jaw I carried out the electrolytic treatment: the number of sittings was 12. The patient is able to wear artificial teeth with great comfort and advantage. Casts A and B showed the comparative results.

The bleeding at the operation by Mr. De Morgan was, if not alarming, at least considerable, both at the time of the operation, and for many hours afterwards.

Case III.

Dr. McOscar of Argyll Street was kind enough to show me this case. Mrs. A. H., æt. 53, had an epulis of the upper jaw on the right side over the site of the last molar tooth, which had been extracted three years ago. The tumour began to form, however, three years *previously* to the removal of the tooth, 'like a gum-boil,' and at first felt, the patient describes it, as though it wanted 'to push through the surface.' At the time of her first coming under observation there was considerable flow of saliva and also swelling and tenderness at the angle of the jaw and down the side of the neck, with stabbing pains; general health impaired. The electrolytic treatment extended over eight months. Now, the health is greatly improved, and there is no pain, and the patient can bite with the jaw where the tumour lately existed. The tumour was seated on the upper jaw, it overlaid the hard palate but was not adherent to it. It was soft and of a livid red colour, bleeding freely on puncture; it had, it was supposed, sprung from an alveolus.

Dr. McOscar, who has devoted much time and energy to the galvanic treatment of disease, carried out electrolysis. The current was at some sittings disseminated through several needles, especially at the early stages of the treatment when the tumour was largest.

All that now remains of the epulis is the bony basis and some indurated cicatricial tissue constituting a small mass large enough neither to interfere with the closure of the jaws nor the adaptation of artificial teeth.

Case IV.

The patient, a young woman, applied at the Middlesex Hospital with epulis of the lower jaw, causing disfigurement by bulging out the lower lip on the right side of the symphysis. The case is now in progress.

Cast H shows the lately existing state of parts the depression indicating where the needles have been inserted.

Whether epulis be a tumour of the gum, of the periosteum underlying, or of the bone, or of the periosteum of the alveoli, or is primarily malignant, is more a pathological than a clinical question. But where the tumour is cancerous, electrolytic treatment is likely to be no more effective in curing the disease than any other treatment, nor less so. I have had no experience in dealing with malignant epulis by galvanic action, but I should confidently anticipate the gain of as much, if not more, advantage by electrolysis than by any other means.

Mr. Cæsar Hawkins, in a clinical lecture given at St. George's Hospital, May 19, 1846, describes the case of a female patient æt. 30, and he recounts the characters of epulis. It seems, however, that the treatment he adopted was so severe that the patient fled, '*perhaps rather frightened at the idea of the caustic being repeated.*' A reference to page 264, vol. i. of Mr. Cæsar Hawkins's 'Contributions to Pathology and Surgery' will supply the minute details of his treatment.

Method of procedure by Electrolysis.—I have used cells such as are on the table, which consist of a porous vessel charged with manganese oxide and iron, the exciting fluid being a solution of ammonium chloride.

The electrodes may be of steel, or steel gilded, or of platinum, according to the hardness or density of the tissue to be acted on.

Platinum is, in most instances, sufficiently rigid to penetrate any tissue that is amenable to electrolytic action. Gold itself is too soft, and it is difficult to obtain a sufficiently sound gilding to steel needles to prevent the oxidation of the oxygen-liberating electrode.

Several years ago Mr. Spencer Wells drew attention to the advantage in old ulcers (of the leg) of using a mild constant current by the simplest arrangement, that is to say, one copper and one zinc plate. Since then I have applied the constant current in a considerable variety of surgical cases, but for the first lesson in the electrolytic treatment of morbid growths I am indebted to Dr. Althaus.

XXXVIII.—*An Anomalous Mottled Rash, accompanied by Pruritus, Factitious Urticaria, and Pigmentation, 'Urticaria Pigmentosa (?)'* By A. SANGSTER, M.B. *Communicated by* THOMAS BARLOW, M.D. *Read April* 26, 1878.

C. F., æt. 2, a healthy-looking, well-nourished little boy, the subject of the disease about to be described, came under observation in August 1877. The patient's mother stated that, before he was a week old, he was severely jaundiced, the conjunctivæ being described as having been quite yellow at the time: this passed off in about a fortnight, and since then he has had fairly good health, with the exception of his skin trouble. The latter seems to have commenced in early infancy; the skin, to use the mother's expression, has always 'risen in bumps' (wheals) wherever it was irritated. Even handling the child in the process of dressing would cause the bumps to rise up; they would disappear, however, according to the mother's statement, without leaving any traces.

When the patient was two months old, a mottled-red rash appeared on the abdomen, which was thought by the mother to be measles. A medical man who was consulted did not consider it to be of this nature, and expressed an opinion that it would soon disappear.

A similar skin affection to that above described soon commenced to appear on other parts of the trunk, which at length became almost covered. Very early, the rash seemed to cause irritation, for wherever it was thickest there the patient scratched, causing the wheals before alluded to to rise up. The mother remarked that the wheals were caused by the scratching, because they often appeared in lines following the direction taken by the patient's nails.

Up to the present time the disease has remained the same in general characters, excepting that the mottling has gradually spread to the extremities, and the older patches, e.g., those on the abdomen, which were formerly red, have become browner in colour.

There are one or two points of interest in the patient's family history. The grandmother on the mother's side suffered with a scaly skin disease, and a maternal uncle is now under treatment for psoriasis. The mother considers herself healthy. A second child was born in October 1877,

but it wasted and died when it was six weeks old: it is said to have been slightly jaundiced.

The history on the father's side is negative. There is no suspicion of syphilis on either side.

Briefly, the following is the patient's present condition: On being stripped the body is seen to be covered—in some places more thickly than others—with a buff-brown, and buff-red, somewhat coarsely mottled rash. The term 'mottled' describes the condition best, because, although there may be seen some isolated patches, yet, for the most part, the latter shade off and blend with others near them. The eruption is thickest on the back, abdomen, and sides, the surface in the latter situations being almost uniformly brown.

The parts least affected are the backs of the arms and forearms, the loins and buttocks.

The face and scalp may be said to be free, although there is some degree of mottling on the right cheek.

The backs of the hands, but not the dorsal surfaces of the feet, are free, as are also the palms and soles.

It is remarkable that the flexures of the joints, axillæ, groins, and popliteal regions, are specially affected, and these are the parts where the patient may be seen to scratch most vigorously. In the above-mentioned situations, the brown patches are arranged in lines, parallel with the natural folds of skin.

The mottling on the thighs and legs is of the buff-red colour mentioned above: here, the rash looks very like a measles rash, while on the chest, it resembles chloasma.

On passing the hand over the surface, some of the patches feel slightly raised, but this is scarcely noticeable.

Nowhere, on pinching up folds of skin, can there be detected any increase of substance.

When the pigmented surfaces are examined closely, all that can be noticed is that the natural texture of the skin is a little coarser in these places.

On stretching the affected skin over the brown patches, no change occurs, but if the buff-red patches, e.g., those on the thighs, be submitted to the same treatment, they become paler, the red element disappearing and leaving a faint buff tint.

Often, during the examination of the patient, wheals were seen, some in lines, all apparently as a result of scratching.

There are no other lesions of the skin to be noticed—no desquamation, no blood-crusts, or papules. As before stated, the body is well-nourished. The liver-dulness is normal.

Dr. A. Sangster's case of Urticaria Pigmentosa.

There is no sugar, albumen, or bile in the urine, nor have the stools been noticed to be abnormal in colour. The mother's opinion is that the patient does not sweat so much as other children.

It will be remembered that cases similar to the one above described have been brought before the Clinical Society by Dr. Tilbury Fox, Dr. Barlow, and Mr. Morrant Baker. They were thought to be xanthelasmic in nature by Dr. Tilbury Fox, while one or two were considered by Mr. Hutchinson to be allied to urticaria. On reading over the cases alluded to above, as published in the 'Clinical Society's Transactions,' and comparing them with my own, there are some points of similarity to be noticed. In the series reported, however, the patches of disease appear to have been circumscribed and raised, in one instance 'not quite a quarter of an inch'; this condition was marked also in Mr. Baker's case, which I had the privilege of seeing. Dr. Thin's report on the microscopic appearances of the diseased patches in Mr. Baker's case, seems to negative the theory that the disease was xanthelasmic in nature.

Dr. Barlow's case more closely simulated my own, inasmuch as the patches were very slightly raised, and there was 'Factitious Urticaria' from infancy.

Jaundice was mentioned in most of the cases as not having occurred.

It may be conjectured that the disease described in this paper is caused by vaso-motor changes in the skin, either occurring spontaneously, or set up by external causes, such as mechanical irritation.

The vaso-motor changes are possibly connected with functional liver-disturbance; at any rate they have a tendency to become permanent, and lead to further pigmentary changes.

XXXIX.—*Cases of Follicular Mal-Nutrition* (*Cacotrophia Folliculorum*). By TILBURY FOX, M.D. *Read April* 26, 1878.

THERE are several well-known and distinct diseases characterised by the formation of papules at the hair follicles, possessed of special characters, that is to say, with features other than those of mere congestion. Such diseases are known by the terms *Pityriasis pilaris, Lichen planus* and

ruber, Lichen scrofulosorum: and *Lichen pilaris* which may be taken to include torpor of the follicles, or simple retention of exuviæ followed by more or less congestion.

I have, however, met with a goodly number of instances during the last two or three years—since, in fact, my attention has been particularly awakened to the point—of an affection of the hair follicles to which none of the foregoing designations are applicable, and which I believe to be clinically a distinct one.

I exhibited at the annual meeting of the British Medical Association at Manchester in 1877 amongst others a drawing of an eruption with the title 'Cachectic Disease of the Follicles' (Cacotrophia folliculorum) illustrating the particular disease to which I now direct your notice, and to which I attached the following brief explanatory note:—'This illustration is that of a disease quite distinct from these (i.e. Pityriasis pilaris, Lichen planus, L. pilaris, and L. scrofulosorum) and mere follicular torpor, and deserves recognition as a separate condition. At first sight it appears to be nothing less than ordinary but severe Lichen pilaris, but in its severity, its deeper affection of the follicles, its congenital nature, and its general distribution more or less all over the body, and its obstinacy to treatment, it is different. Willan thought Lichen pilaris a modification of Lichen simplex in which the papules were perforated by hairs. Modern writers include under the term plugging of the follicles by exuviæ. But in this disease, which is not a simple inflammation, the deepest part of the follicle is affected, the hairs do not appear perforating the papules but are destroyed, and the disease consists in a defect of nutrition of the follicles as a whole, whilst those of the entire body are more or less affected.'

In January 1878 Mr. Erasmus Wilson in his lectures at the College of Surgeons made use of my drawing of the disease, and gave an independent explanation of the latter in complete accord with the statements I had already made, although he entered more fully into details.

I find also on talking over the subject with my friend Dr. E. Liveing, that his experience is similar to my own: so that Mr. Erasmus Wilson, Dr. Liveing, and myself are in complete agreement upon all essential points as to the nature and distinctness of this cacotrophic affection of the follicles.

General description.—At first sight the disease I am

about to notice would seem to be nothing more than severe follicular torpor or Lichen pilaris, and I doubt not has been regarded as such by those who have met with cases of the kind.

Inasmuch as the designation Lichen pilaris is used with a considerable amount of indefiniteness or looseness, I think it will facilitate the more ready comprehension of the special condition to which I propose to direct attention if I here, first of all, very briefly recall the leading features of Lichen pilaris. This was described by Willan to be a 'modification of Lichen simplex, the papules appearing only at the roots of the hairs of the skin,' in fact as an inflammatory (or exudative) state of the follicles. Most modern authorities, however, mean by Lichen pilaris one of two things: either (*a*) follicular torpor due to plugging of the hair follicles by epithelial exuviæ and sebaceous matter, as in persons in whom the activity of the skin has been much diminished, or its circulation and nutrition have become sluggish, and also in strumous persons *par excellence*; or (*b*), simple inflammation with exudation into the follicle, especially its upper part, and the consequent formation of papules pierced by the hairs which remain practically unchanged. This latter state answers to Willan's Lichen pilaris, and is brought about by many local and general causes, that act as irritants to the skin, such as uncleanliness, scratching, acrid blood-states, as in gout, cold, and eczematous inflammation involving the follicles. It may also be evolved from the first-named condition or mere follicular torpor, the irritation of the retained exuviæ and consequent scratching exciting inflammatory congestion. Lichen pilaris is not often seen in the very young but in adults. It is an *acquired* disorder, and is *more or less localized* to particular parts, especially the thigh and the outer side of the arm and forearm. It is attended by slight itching, and it is remediable without much attendant trouble. According to this description therefore, Lichen pilaris includes all *simple* inflammatory conditions of the follicles however produced with follicular torpor, and not only the Lichen simplex of the hair follicles of Willan.

The condition to which I now call attention possesses different characters from Lichen pilaris:—

In it the deepest portions of the hair follicle including the hair papillæ are implicated no less than the more superficial parts, and the formation of hair is interrupted or in

abeyance, so that the hairs are few or absent, and, if present, shrivelled or twisted.

It is not a comparatively trivial or local affection, but affects frequently almost the whole of the follicles of the body.

It is not so much an inflammatory condition as one of defective or indolent nutrition, peculiar to the individual from the earliest age, or truly congenital—though I am not prepared to say it is always congenital, and not *acquired* later on in life—and attended in some cases in my experience by weak performance of the perspiratory and sebiparous functions of the skin. The papulation is produced chiefly no doubt by impaction in the follicles of exuviæ, but there is likewise present passive (not active) congestion of the whole follicle more or less marked with its attendant consequences. There is not a *plus* capillary so much as a *minus* capillary activity, if I may use such an expression. The papules are certainly not inflammatory as in many cases of Lichen pilaris, and mere follicular torpor is more localized and superficial.

It affects by preference the outer aspect of the upper arms, the shoulders, especially at the back, the thighs, the trunk, the sides of the face and the forehead, which, however, is sometimes the seat of seborrhœa sicca. Wherever the disease exists the eruption is made up of solid red papules the size of a very small pin's head, which are at once seen to be seated at the hair-follicles, and each follicle being more or less affected the surface is marked or dotted over, as it were, with the red points in a singularly uniform and regular manner. This is well seen in the drawing I send round. There is usually a red blush over the surface generally, the part looking redder than usual although the red points or papules stand out to view with great distinctness. The papules are raised and feel firm. Few hairs are seen escaping from them, and such as are present are dry, twisted, and shrivelled in aspect. All the papules are seen to be plugged by exuviæ, but the plug is not so white and distinct as in Lichen pilaris, neither can it be picked away so readily, but it is more adherent, and is rather an adherent scaliness than a loose collection of cells. Some of the papules present an acneiform appearance. I have mentioned the co-existence on occasions of seborrhœa of the forehead, but a more characteristic appearance is a slightly prominent, reddened, minutely papulated condition of the parts of the face in young women

between the ear and the middle of the cheek, and extending sometimes to beneath the jaw. If a careful examination be made with a lens, the surface is seen to be studded over with minute prominences, which I believe are congested follicles, intermixed with small acne spots.

The constitutional tendencies of the patients in cases of this cacotrophy of the follicles have been, in instances that have come under my care, of a weakly or strumous or phthisical kind. I have seen the disease so far in females mostly, in men exceptionally and not then as a source of complaint.

This condition may not come under the medical man's notice till the subject of it reaches the age of puberty. It will be found on inquiry, however, in some cases, that the red papulated harsh condition has existed since the earliest time. In my experience advice has been sought for the disease at the time that the skin becomes physiologically active, at or about puberty, and when and because the skin has become *irritable* from its inability, as it seemed to me, to perform its functions properly; or acne or seborrhœa have developed themselves, and so complicated what before has been regarded with inattention.

The disease is certainly not an inflammatory condition, and if I were to be compelled to give a general description in brief, I should say that its features impressed me with the notion that it *might* be regarded as a xeroderma *limited* to the follicles of the skin. Mr. Wilson affirms that it occurs in families in whom ichthyotic conditions are present in certain members, but I have not observed the same concomitance distinctly. It is worthy of note in this relation to xeroderma that in one case of my own the interfollicular portion of the skin gave slight indications here and there of a dry and dull aspect, but it may have been accidental. The papules, however, in many cases certainly remind one of the solitary papular elevations seen in cases of xeroderma, but those of xeroderma are less congestive. Of course in ordinary cases of xeroderma and ichthyosis, it is not unusual to see the follicles plugged by epithelial and sebaceous stuff forming papules studding the surface in different parts, but this is in association with and only a part of more distinct and general phenomena of the disease. The condition I describe is quite distinct from this ordinary papulated aspect of ichthyosis. It is one in which the follicles alone are affected, and in which the usual phenomena of ichthyosis are wholly absent. All that I say now—and this is to avoid

coining a new term and a new disease—is that the cacotrophic state I am describing may be likened to xeroderma limited to the follicles, if such a disease could exist, and may be classed with xerodermatous affections for convenience' sake. Of such a state I find no description in the best standard works, and for that reason think it desirable to call attention to it, and I think under the circumstances that mal-nutrition of the follicles (Cacotrophia folliculorum) is its best designation.

I now proceed to give the notes of four well-marked cases that have been recently under my observation. The drawing I hand round was made from the arm of the young lady whose case I will detail first. Plate VI.

Case I.

The patient in the case from which the drawing was taken was a young lady seventeen years of age, in all respects save her skin fairly healthy at the time of observation. She had suffered from the disease since her birth. The malady had varied in degree of intensity from time to time, and the body had been universally affected. She was born prematurely, being a seven months child, so that there was a cause for any defective nutrition of the skin. At her birth she was very weakly, and is supposed to have been suckled by an unhealthy nurse. It was soon noticed when she was being washed that her body was unusually red, and then after a time the present affection became pronounced. The only other circumstances of importance noticed about her when a child were that her two front teeth were 'rocky,' that she had 'corneitis' at the age of fourteen, and that the eruption has defied all remedies.

The whole of the body is covered over by small raised and pointed papules seated at the hair follicles, most of them are reddish, others are paler, but the tint varies at different times, and as each hair follicle is affected, being swollen and projected forward, the surface is studded in a uniform manner by these papules, and where these hair follicles are arranged in lines so are the papules, as may be seen at the lower part of the illustration above the elbow. The interfollicular portions of the skin are unaffected or there is a slight flush thereat. The surface presents somewhat the appearance of, and feels like, a rasp or nutmeg-grater on a small scale. The papules do not present an uniform

U of M

W. Mastern lith.

Mintern Bros chromo

Dr Tilbury Fox's case of Cacotrophia Folliculorum

appearance at their apices. In some there *seems* to be apparently a central *minute* plug of epithelial matter, but it cannot be picked away so readily and is not so large as that in pityriasis pilaris. In other cases the apex consists of a little mass of the same kind, only made up of broken-up adherent scales, such as is represented as seen by a lens in fig. A, and this mass may be in part detached and free upon the surface. In others the appearance is that of comedo, fig. B, but the dark speck is rather a brittle, black, horny plate than discoloured sebaceous stuff. In other instances there would seem to be little depressions, fig. C, with minute scales at the bottom, as though either the papules had disappeared and left them behind, or the little epithelial plugs had been scratched out. In some few spots it would almost seem as if the papules tended to suppurate and to assume an acneiform aspect. But in all cases the scaliness at the apex is blended and closely adherent to the thickened follicle itself. The patient states that when the papules disappear they leave red pits for a while. (*The references a, b, c are omitted from want of space in the plate.*)

It is noticeable that there are very few hairs visible over the surface, and the few that remain are much twisted, more or less broken off or shrivelled; in fact it is evident that the disease affects the entire follicle including the hair papilla, so that the formation and growth of hair is interfered with. The disease is most marked over the outer aspect of the limbs, especially the arms and forearms, and outside the thigh above the knee, but it is seen on all parts of the body. There are paroxysms of itching which constitute the only disagreeable symptom beyond the actual disfigurement. A slight mealy desquamation is present, but the fine scales are detached at the apices of the papules. *There is no attempt at the formation of patches* in any part of the body by the coalescence of the papules, and this is a very marked feature of the disease and differentiates it in one point from Lichen ruber.

Case II.

Miss F. æt. 21, consulted me in 1877 for a rash of pimply character affecting the greater part of the skin, and which had latterly become irritable.

The patient's mother was a delicate woman. The young lady herself is of florid complexion, short, dark, and has

some indications of the scrofulous conformation. She states that she has always had good health and has been strong, except that she has suffered from chilblains, and occasionally slight dyspepsia, and scanty menstruation.

Her attention was first specially directed to the disordered state of her skin about two years since. She states that ever since childhood she can remember her legs and arms being rough, but it did not trouble her till two years since, when it began to look redder, feel more 'rashy,' and the red pimples appeared about the waist and over the shoulders; within the last few months the thighs have become distinctly involved in the increasing disorder.

At the present time the whole of the follicles of the skin are the seat of red papules, which dot over the surface uniformly. They do not appear to be produced so much by the plugging of the follicular apertures by sebum or cuticle, as by a general thickening of the follicle itself. The rash is most decided over the arms, shoulders, thighs, and gluteal region, in which places the skin feels rough and harsh from the elevated red papules. There is not much itching. The face has naturally a light and full colour, but the cheeks are particularly so, and the posterior part of the cheek and the part near the ear is raised, hyperæmic, and slightly papular, and here and there an acne spot appears amid the papular rash.

Case III.

Miss J. W. consulted me in 1877; she was seventeen years of age, and had been troubled with the rash for two and a half years at least. She does not come of a strong stock; some of them certainly are delicately inclined. She has suffered from enlarged glands, and chilblains, and capricious appetite. She is pallid, and the scalp is the seat of seborrhœa.

My notes say that over the whole of the back of the arm, the shoulder, and the back as far as the middle of the scapula the skin looks generally red, and is dotted over with pale or red papules having the usual characters found in these cases. There are traces of the disease on the thighs. The front of the face and forehead are free from eruption, and there is no acne in these situations, but at the side over both cheeks, and extending below the jaw, the surface looks flushed, and, by the aid of a lens, is seen to be studded with papules seated at the hair follicles, some of which are

slightly acneiform, and this began about the same time as the mischief on the arm. The young lady has always been most particular about ablutions, and takes her bath every morning.

Case IV.

Miss R., æt. 18, consulted me January 1878 for a rash possessing the characteristic features on the arm, especially at its outer part, and for the same complaint extending over the shoulder. The rash is not a matter of discomfort, but only a blemish, and advice was sought on account of the unsightliness produced. The young lady first noticed, about eighteen months or two years since, that the skin was red, pimply, and rough, but this condition disappeared for a time, but began to recur six months ago. There is no disease in any other part of the body except slight seborrhœa of the eyebrows.

There is no history of phthisis, scrofula, or the like, in the family.

The patient has always been pretty strong, save that when young she had several attacks of inflammation of the lungs, and her mother thinks her 'not very strong.' She suffered last year much from chilblains. She always has her bath and uses it vigorously. She is inclined to acne of the face.

I give the general features of the last two cases to illustrate the less severe manifestations of the disease.

Differential diagnosis.—I need not enter more fully than I have already done into the differences between Lichen pilaris and Cacotrophia folliculorum. Neither is there occasion to compare the latter with Lichen scrofulosorum or Lichen ruber, but there are one or two other states which may be confounded with it.

Lichen pilaris.—I cannot think that the disease can be classed with Lichen pilaris, if only on account of the four following reasons, which I may here repeat, and which may be taken as a summary of the main general features of the disorder, viz:—*a.* The affection of the follicles more or less generally over the body. *b.* The implication not only of the more superficial but the deeper parts of the follicles. *c.* The apparently congenital nature of the disease. *d.* Its obstinacy to treatment; *e*, and the absence (I may add) in those

in whom it occurs of the conditions which specially give rise to Lichen pilaris.

Ichthyosis.—I have already said enough upon this point in describing the characters of the disease under notice, and refer the reader to my remarks in the early part of the paper. The disease is essentially follicular, and does not affect the interfollicular portions, as is the case with ichthyosis.

Folliculitis of Wilson.—In talking over this matter one day with Mr. Erasmus Wilson, he told me his attention had been directed to the form of disease under notice, and referred me to a paragraph in his 'Lectures on Dermatology,' 1871, which runs as follows:—'The inflammation and hyperæmia of a single follicle may be a pigmy consideration in itself; but when those conditions are present in great numbers and occupy a considerable extent, the case is generally troublesome and sometimes very serious. Folliculitis is frequently chronic, but occasionally acute. As a chronic affection we meet with it on the faces of young persons, in the form of a punctated rash, *folliculitis punctata*, and our patients are apt to speak of it as a rash under the skin; at other times it is seen on the back of the shoulders and arms, on the forehead, and especially the eyebrows; there it occurs as an eruption of minute papules, each papule being the summit of a follicle loaded with epithelial exuviæ, and having a reddened base. Where the follicles of the eyebrows are attacked, the hairs are ejected and cease to be produced, and this is especially the case in chronic folliculitis of the scalp, which is attended with itching, with desquamation, with dryness of the skin and loss of hair' (page 134).

I do not quite recognise cacotrophia folliculorum in this description of Mr. Wilson's. Follicular inflammation is not it. The folliculitis punctata of young women, made up of very pale papules scattered about the forehead and temples, and seated at the follicles and constituted of follicles with retained sebum, but lacking the black point of comedo, is a common form of Acne punctata. Seborrhœa of the eyebrows or the Lichen pilaris in strumous subjects is not it. I think clinically it is requisite to distinguish these and the cacotrophic condition; still Mr. Wilson may have been referring to a phase of the latter.

Follicular hyperæmia.—But there is another form of eruption which I think should be most carefully recognised

as a disorder distinct from follicular mal-nutrition, and that is congestion of the follicles in adults, induced by disturbance of the organic system of nerves, and which I do not find described in books anywhere. In this eruption the surface is *uniformly* dotted over with red points, every follicle being affected, but the papules are not very prominent and have no decided plug in their centres, but are mainly hyperæmic, some slight effusion taking place. They are usually almost removable by pressure. The skin of the trunk, and arms, and thighs, has been particularly affected, dotted over uniformly with soft red points, the size of pins' heads, corresponding to the hair follicles; there has been no scaliness. When the disease was getting well little pits were left behind. The disease has been very chronic, very itchy and tormenting, very obstinate, and occurred in debilitated persons, in those who have been a good deal worried and tried by anxiety. I have only seen a few cases in all. The disease was not congenital, and seemed to me to be due to vaso-motor disturbance of the follicles, and more allied to Lichen ruber, perhaps, than any other: certainly it was not due to any defective nutrition.

Pityriasis pilaris.—There is lastly a rare eruption, the pityriasis pilaris of Devergie, which must be carefully distinguished from the cacotrophia folliculorum. I recorded a remarkable instance of this pityriasis pilaris in the *Medical Times and Gazette* for 1871. It is characterized by the formation of papules at the hair follicles by the filling of the follicle by desquamated cuticle, a little knot of cuticle occupying the orifice of the follicle. But this pityriasis pilaris, which I have figured in Plate XXXIX. in my Atlas, is not an independent disease, but an accident or phase of pityriasis rubra. It may be the early stage of that disease, the follicular portion of the skin being first diseased, before the general interfollicular portion is involved, or it may be left behind by a disappearing pityriasis rubra, the interfollicular part of the skin recovering itself whilst the follicular involutions have not. I have seen an instance of each kind. The disease is therefore unlike cacotrophia folliculorum in aspect and connections, though it may bear some resemblance to it so far as its papulation is concerned, but only in that respect.

Treatment.—I have already stated that patients may be affected with the disease in a quiescent condition for years and never seek advice on account of it, since it gives rise to

no inconvenience; but at the time of puberty, relief is demanded on account either of its unsightliness on parts of the body exposed to view, or the occurrence of new symptoms, such as itching, or an increase of the disease, or by the complication of the eruption by acne or seborrhœa. There are, therefore, therapeutically two sets of cases, the one in which the disease is complicated by other conditions and the other in which it exists alone. In the former instances, where acne or seborrhœa coexists, the treatment demanded is chiefly and first of all that suited to the complicatory affection: one of the prominent internal remedies being cod-liver oil. But in all cases the state of the patient's health will be found to be unsatisfactory, and to call for careful regulation of diet and exercise, and a judicious selection of tonics, to meet phthisical tendencies or other states of debility, from overgrowth, too sedentary a life, &c. For my own part I have found the mineral acids, with quinine, and perhaps iron and cod-liver oil, the most efficacious remedies internally.

Locally in uncomplicated cases, i.e. where acne and seborrhœa are absent, or to situations in which the papulation alone exists, stimulant and emollient applications are needed. I prescribe bran and alkaline baths, extract of pine, and sometimes tar baths, to be followed by free inunction of oil, and the use of some mild tarry lotion (such as one containing the liquor carbonis detergens much diluted). Such means tend to loosen the plugs from the follicles and to stimulate the glandular portions especially of the skin to a due degree of activity. Such remedies need to be continued for some time, and care must be taken against relapses from ill health. The disease is obstinate, and in severe cases seldom *completely* disappears.

When the disease is spreading care must be taken in the use of stimulating local remedies that they are not too freely used, whereby inflammatory action may be excited, in which case some mild astringent application, such as calamine and zinc lotion, must be employed for a time.

The results of treatment in my hands have been good and encouraging.

XL.—*A Case of Ovariotomy in a Child aged twelve years.* By THOMAS BARLOW, M.D., *and* HOWARD MARSH. *Read April* 26, 1878.

ON July 6, 1877, Sarah Blackie, aged 12 years, was brought to the Out-patient Department of the Children's Hospital, Great Ormond Street, on account of enlargement of the belly.

There was slight unfolding of the navel, very slight distension of the superficial veins, and no œdema of the walls of the abdomen. The enlargement was much more on the right than on the left side, and on palpation was obviously due in part to a new growth in the abdominal cavity.

Beginning at a spot two inches below the ensiform cartilage, it was possible to trace a hard mass extending both ways: to the left as far as the left nipple line, and to the right as far as the mid-axillary line, thence down the right flank towards the iliac fossa. Internal to this mass, that is, occupying the umbilical region of the abdomen, there was a mass to be felt quite different in consistency, probably a tight cyst, inasmuch as obscure vibration could be felt on palpation in the usual way.

The tumour as a whole was distinctly movable to a slight extent from side to side, and from above downwards. The most solid portion was undoubtedly in the right iliac region. The tumour did not appear, on superficial examination, to descend into the true pelvis. It was dull throughout. There was no pain on manipulation. With respect to its relation to the abdominal viscera, intestinal resonance was quite distinct in both flanks. The hand could be got behind the tumour and above it—that is, between it and the ribs. The liver dulness began in the fifth space in front, the sixth space in mid-axilla, and the tenth space behind. The lower edge was not palpable, but probably came to the thoracic margin. Between it and the palpable part of the tumour there was some resonance. There was no œdema of the lower limbs. The heart and lungs were natural, with the slight exception that breath-sounds were heard rather better at the left base than at the right.

The child had walked to the hospital; she had no dyspnœa or distress of any kind, except that she said she had a little trouble when she sat down. She was thin and rather pale, but as she was naturally spare-built, too much stress could

not be laid upon these appearances. There were no enlarged glands to be felt. Her tongue was clean and her skin cool, and there was nothing else noteworthy about her, except a partial occlusion of one pupil, which was probably congenital.

With respect to the family history it was learnt that the father was said to have died from some chronic throat disease, and both his brothers and sister from consumption. Of the ten children, three were said to have died of consumption, and the others were said to be delicate, very subject to colds, &c.

This girl had had measles when a baby, but nothing else had been noticed amiss with her till eighteen months previous to her admission. Then first the mother found that something was growing on the right side below the navel. The child had been singularly free from symptoms. There had been no vomiting, no trouble with the bowels or urine, and, except lately on sitting down, no pain. The mother considered that during the last six months the child had been getting thinner and paler, and that her appetite had failed. She was quite positive the swelling had increased, and for this reason she had brought her to the hospital.

My colleague, Dr. David Lees, saw the child along with me, and we both agreed that, considering the history of the commencement of the tumour—considering also its benign progress, its mobility, its separability from the liver and kidneys, and, finally, its mixed character—partly solid and partly cystic—that it was a tumour starting from the right ovary.

The child was admitted and kept under observation for a few days. Her temperature was natural; urine free from albumen, and she only suffered from a little constipation.

On July 14, I asked Mr. Marsh to examine the child with regard to diagnosis and surgical treatment. Mr. Marsh was also of opinion that this was a case of ovarian tumour, but we agreed that it was justifiable to make a tentative puncture of the central portion with a view to ascertain whether fluid was present there or not The child having been chloroformed, a hypodermic syringe was introduced two inches below the umbilicus: ʒj of clear straw-coloured fluid was withdrawn, which was neutral in reaction, and became quite solid on boiling and the addition of nitric acid. Whilst the child was under chloroform we took the opportunity of examining by the rectum and vagina. But the tumour could not be felt; the only point noteworthy was that the os uteri seemed rather high up. Next day there was a slight rise of

temperature, viz., up to 99·4°, but there was no other sign of constitutional disturbance. By the 18th, i.e. four days after the removal of one drachm of fluid, there was a marked change in the condition of the abdomen. There had been considerable collapse in the umbilical region, and the abdomen was flattened, compared with its former shape. The girth of the abdomen at the umbilicus was reduced from 26⅞ to 25⅛ inches. The hard rounded portion before referred to was now quite definite. It extended from the right iliac region to the right hypochondrium, and almost as far as the left nipple line. It measured three fingers' breadth, was very movable, and contained in its ascending portion some very hard material—quite hard enough for bone. The elastic fluctuating portion around and below the umbilicus, which was tapped by the hypodermic syringe, had become quite flabby, and there was no longer evidence of fluid.

The existence of the hard material in the ascending portion of the mass made us now quite certain that we had to do with a dermoid tumour, and added strongly to the belief that it was a tumour of the ovary.

After about six days the central portion appeared to have refilled. The girth of the abdomen at the umbilicus became 27 inches.

There was still, however, resonance in the flanks.

By August 4 the girth had increased to 28 inches. The tumour was still movable and seemed to have risen a little higher in the abdomen.

She had a little pyrexia, but her tongue was clean, her appetite fair, and her bowels open daily.

On August 29 Mr. Marsh, on consultation with Mr. Thomas Smith, thought it best to completely aspirate the cystic portion with a view to ascertain as far as possible the relations of the tumour and the feasibility of removal.

The fluid removed was of the same character as before and measured about six pints.

In a few days the cyst filled again. And there seemed also reason to think that the solid portion was increasing in the upper part of the abdomen.

Operation.—On August 10, the patient being in a single-bedded, well-ventilated ward, which had been thoroughly cleaned and aired, and the temperature of which could be carefully regulated, the following operation was performed by Mr. Marsh.

Chloroform having been given, and the bladder emptied,

an incision 3 inches long was made from the umbilicus downwards in the middle line. When the peritoneum was laid open the omentum came into view. This was carefully drawn aside and the tumour was exposed. There were no adhesions. The tumour was now tapped and 80 ounces of a light brownish-green fluid, of the consistence of turbid serum, were drawn off. After this it was found that a solid portion remained too large to pass through the abdominal wound. The incision was therefore extended nearly to the pubes and upwards about an inch above the umbilicus, and the tumour was then drawn out. It had a fairly long, though thick and fleshy pedicle, connecting it with the right ovary. The left ovary was healthy. The pedicle was clamped by Mr. Spencer Wells's method, and divided. The peritoneal cavity was then thoroughly cleansed by repeatedly introducing soft sponges among the intestines, and into the pelvis. Search was made for any points that might be bleeding, and two or three small vessels in the omentum (which was at one spot slightly torn) were tied with fine catgut, the ligatures being cut short; and the wound was closed by deep silver sutures, and supported with broad pieces of strapping and a flannel bandage.

The child was a little sick during the operation, but her pulse and breathing remained quite good.

The tumour weighed 2 lbs. 11 oz. It measured 6 inches across and 7 inches from above down.

The shape of the whole mass was nearly spherical.

Rather less than the lower half was formed of a large thin-walled cyst capable of holding a large cocoa-nut.

The inner wall of this cyst was rendered irregular by the projection into its cavity of the walls of smaller cysts.

The hard portion, felt before the operation to the right of the tumour, proved to be a plate of bone measuring 2 inches by 4 inches. There were some other small detached pieces of bone in other parts of the tumour.

The upper and outer half of the tumour was also made up of cysts, but with either gelatinous or solid contents. A great many of them contained sebaceous material with collections of dark short hairs. There were some fibroid bands and irregular spicula of bone interposed between some of the cysts.

A short summary of the subsequent course of the case will suffice. No bad symptoms occurred. On one occasion only was the temperature above 100°. The child for the

first five days complained, from time to time, of pain in the abdomen, but this readily yielded to morphia suppositories. Vomiting occurred on the third day, but was to no serious extent. When the wound was dressed on August 13 it was found to be in great part closed. The pedicle was a good deal swollen and formed a bulky protrusion through the lower portion of the incision. Between the 8th and the 11th day, as the wound became firmly united, several of the sutures were removed. The bowels acted spontaneously on 12th day, and on 13th the clamp dropped off the pedicle. The last suture was removed on 15th day. For some weeks the stump of the pedicle remained protruded and covered with florid granulations, and was not completely retracted till November 6. On November 29 the child was discharged.

We wish to draw special attention to the advantage of the puncture with the hypodermic syringe for diagnostic purposes, and to the remarkable absorption of the fluid contents of the cyst within a few days. It was suggested to us by our colleague Mr. Thomas Smith that the fluid had slowly oozed through the minute opening in the cyst into the peritoneal cavity, and there had been absorbed. If that were the case, which we think extremely likely, it is worth notice as discountenancing the commonly accepted view of the extreme intolerance of the peritoneum for any ovarian fluid. It is well known that the removal of a small quantity of fluid from an hydatid cyst of the liver by a similar method is often sufficient to cause the complete atrophy of the cyst, and it may be presumed that in that case also some fluid may possibly ooze into the peritoneal cavity.

Whatever the *modus operandi*, whether in consequence of slow oozing, or by inducing a mild inflammatory action in the cyst, or by the slight diminution in tension, allowing the vessels in the walls of the cyst to reabsorb the fluid, we believe that careful hypodermic punctures may not only be used as a justifiable aid to diagnosis, but in some cases may prove to be of therapeutic value.

XLI.—*A Case in which an Irregular Obturator Artery was wounded in the Operation for Strangulated Femoral Hernia.* By ARTHUR E. BARKER. *Read April* 26, 1878.

MRS. X., æt. 56, admitted into University College Hospital on the night of February 7, 1878, for strangulated femoral hernia on right side, which I need not further describe. The patient was extremely fat and pasty-looking. She was very much exhausted and almost pulseless at the wrist. Brandy was administered, and I was sent for, as the house-surgeon felt it was better in her feeble condition not to try taxis until just before operation, should this be called for. Having tried taxis and failed I operated in the usual way, getting rapidly down through a large amount of fat to the neck of the sac and cautiously dividing the constricting fibres. Having freed the neck I tried to reduce the knuckle of intestine, but without success. Examining the neck again I found a few remaining fibres still tightly constricting it. So close were they around it that I expressed the fear that I should be obliged to open the sac, as the constriction appeared to lie in the neck. I managed, however, to pass a director underneath, and with a knife on this carefully to divide them. Immediately after blood welled up from the wound in moderate amount. Thinking I had perhaps cut some small vein I devoted my attention to the hernia, which was now reduced with slight manipulation. Looking then for the bleeding point I found that on drawing the neck of the sac outwards with the finger blood again welled up freely from the bottom of the wound, but it was doubtful to all present whether this was arterial or venous. The wound being very deep, on account of the large amount of fat, it was difficult to make this point out clearly. When the neck of the sac was allowed to resume its position the bleeding seemed to cease. I tried several times, however, to reach the bleeding point with a forceps, but was unable to do so. I then divided the aponeurotic structures a little at the inner aspect of the ring, cutting upwards and inwards carefully, but was still unable to find the open artery. I fancied that after this cut the hæmorrhage was not so copious, and this, together with the fear of wounding the peritoneum, led me to desist from further efforts to find the artery. I was further

strengthened in this conclusion by the memory of a somewhat parallel case I had read where the hæmorrhage appearing to cease no further attempts were made to find the vessel, and the patient recovered. Besides, when the neck of the sac was left to itself there was very little bleeding. I therefore considered it better to close the wound and apply firm pressure over it with sand-pad bandage, leaving in a drainage tube. On the whole perhaps a couple of ounces of blood were lost.

The next morning, Friday, 8th, patient was much better: no abdominal pain or tenderness; pulse better—84; temp. 100·2°.

On Saturday morning, 9th, patient was better still: no pain in abdomen; pulse, 92; temp. 99·8°; thighs not flexed; takes milk and beef-tea well.

The following note is made by the surgical registrar in the 'Hospital Case Paper' for the next morning, 10th (Sunday): 'At 6 a.m. apparently progressing very favourably, but at 7 a.m. commenced to vomit. This increased in frequency until 12 noon: could not be checked; acute peritonitis had supervened, and the patient died at 5.5 p.m.'

A further note ought to have been made that early on Saturday morning the patient looked pale and there was a suspicion of bleeding, but at my visit at 10 o'clock she was looking very well, and, as the notes show, did not take a turn for the worse until the next morning.

The following are the notes of the autopsy abridged from the Hospital Register.

Post mortem.—Wound healthy, commencing to suppurate. Around neck of sac in abdominal wall a good deal of blood effused into areolar tissue beneath peritoneum, which is quite sound. Very little blood collected into distinct clots, but mostly diffused above and below bladder in areolar tissue: about 3 or 4 ounces as nearly as can be estimated.

The obturator artery comes off from the epigastric about ½ inch from its origin, and passes over and then internal to the neck of the sac. Its vein does not accompany it, but runs down over the outer side of neck of sac. This abnormal obturator artery is divided about ⅗ inch from its origin. The distal end seemed to be the source of the bleeding, the proximal being closed by clot. There is no true obturator artery or vein from internal iliac.

Well-marked peritonitis and serous effusion. Nipped portion of bowel very much congested and still tightly pinched and folded on itself. At the point where it was con-

stricted it is almost ulcerating externally, and actually commencing to suppurate internally, where it is covered with large flakes of lymph. Hardly a trace of peritonitis around the neck of the sac, the process having plainly started from the gut. Heart substance soft and very friable.

My object in bringing this case forward is twofold. Not only is it of interest on account of the rarity of this accident, but I also venture to hope that I may elicit from the Society an expression of opinion as to the best mode of dealing with cases where such a mishap has occurred. Is it right, in short, to *persist* in searching for and securing the bleeding artery, or is it not desirable to let it alone in some cases as was done here? As bearing upon this question I have been able, with a good deal of trouble, and by searching through English, French, and German literature, including twenty years of 'Canstatt's Jahresbericht,' to collect sixteen cases in which an accident of this kind has occurred. Excluding four of these in which the mode of treatment is not recorded, we have twelve remaining which naturally fall under two categories —those in which ligature was applied, and those in which it was not and the bleeding was stopped by pressure with pads, &c. Under both headings we have six cases. Now without wishing to make too much of such an analysis I think it is instructive to find that both modes of dealing with these cases have been attended with success. Of the first six, ligature was applied in five, and a hook passed under the artery and secured there in one. Of these two died. Of the second six pressure with pads alone was employed, or the artery was left alone. Of these, one operated on by Dupuytren died three weeks after of peritonitis, when it was discovered for the first time that the artery was divided; another (the present case) died of peritonitis on the fourth day. If we may be permitted to draw any conclusion from these facts it would be that at all events the latter line of action is amply justified. This is an important point to settle; for, it is insisted on by some well-known writers that the artery ought to be sought for in *all* cases and secured by ligature. Guthrie says that the artery is very rarely injured although the case 'alluded to shows that it may be cut; but then it may be tied and ought to be tied in every case in which it has been divided.' He says, further, 'It is surprising to see men who place a ligature on the external iliac or on the common iliac, as a matter almost of course, hesitate at tying the

obturatrix artery, and even allow a patient to die in the meantime of hæmorrhage.' *

In order to make this case as complete as possible, I append a brief digest of the cases alluded to above where a similar accident has occurred to other surgeons, and a table showing the treatment and results in each case:—

	Operators	Treatment	Result	Remarks
1	Liston .	Ligature	Recovery	
2	Stanley .	do.	do.	Difficulty in applying ligature.
3	Avery . .	do.	do.	
4	Adams .	do.	do.	
5	Nichols .	do.	Death	Great difficulty in applying ligature.
6	Corley .	Acupressure attempted	do.	Acupressure needle passed into wound but missed artery; hæmorrhage controlled however by it.
7	Lawrence	Compress	Recovery	Patient became faint, bleeding ceased.
8	Lawrence	Nothing	do.	Patient fainted from bleeding, when the latter ceased and did not recur.
9	Hey . .	Compress	do.	
10	Hardman	Nothing	do.	
11	Dupuytren	Nothing	Death	Patient died of peritonitis three weeks after operation, when the divided artery was discovered for the first time, a little old effused blood leading to its discovery.
12	Barker .	Compress	do.	Patient died, on fourth day, of peritonitis. Dissection showed the bleeding to have come from distal part of divided artery.

Cases in which an anomalous Obturator Artery was wounded in the operation for Strangulated Femoral Hernia.

Lancet, Jan. 8, 1876.

'The neck of the sac was very small and tight, and great difficulty was experienced in getting the director through; this having been accomplished I rather freely divided the neck of the sac, which was almost like sawing through leather. Immediately on withdrawing the knife a brisk gush of arterial

* 'On Inguinal and Femoral Hernia.'

blood came right out of the neck of the sac, and I felt myself in a most undesirable position. I withdrew the director, gave the bowel a touch, when it immediately slipped up. The hæmorrhage continued very free, coming right out of the neck of the sac, but gradually I noticed it was changing to a venous hue; then it became quite venous, and merely welled up, and then ceased. The patient made an uninterrupted recovery.'

W. HARDMAN, M.D.

'Canstatt's Jahresbericht,' 1858, Bd. IV. p. 102.

Mr. Cadge assisted at two such operations where arteries were wounded and considerable bleeding took place. The first was by Liston, in private. The cut was made upwards and inwards, wounding an artery, probably an abnormal obturator at the level of the neck of the sac. The latter was drawn down, the vessel reached and ligatured: recovery. The second case was operated on by Mr. Nichols, of Norwich. The cut was likewise upwards and inwards. Quarter of an hour after wound was stitched up severe hæmorrhage set in. The vessel was sought for and ligatured with great difficulty, the distal portion having to be also tied immediately after. The patient died of gangrene of the wound. Autopsy showed wound of an abnormal obturator artery cut but already obliterated. It sprung from the epigastric one inch from external iliac. The sac was not opened in either of these two cases. (See also 'Liverpool Med. Clin. Journal,' 1858–9, p. 168.)

'Canstatt's Jahresbericht,' 1858; also 'British Medical Journal,' 1857, No. 30.

This case was operated on by Stanley. The sac was opened. Twenty minutes later alarming hæmorrhage set in. It was necessary to make an incision above and parallel to Poupart's ligament, when the vessel was ligatured with difficulty. The patient recovered.

Mr. Avery, of Charing Cross Hospital, and Mr. Adams, of the London Hospital, had also each a case described by Mr. Stanley as similar to his and with the same results.

'Lawrence on Ruptures.'

'After division of the stricture in a case of strangulated femoral hernia in the female on which I operated, a profuse arterial hæmorrhage took place. The blood came from such a depth and filled the wound so rapidly that the source of

the bleeding could not be discovered. The patient became faint; a compress and bandage were applied and the bleeding ceased' (recovery).

Case II. (Lawrence). 'In the operation for femoral hernia the stricture was divided upwards and outwards. As the first incision did not gain sufficient room for the return of the intestine the cut was extended in the same direction. The wound immediately filled with arterial blood, which rose again almost directly to the edges of the incision when removed with the sponge. The mouth of the vessel could not be distinguished. While we were deliberating on the propriety of passing a needle in such a direction as would be likely to include the artery, the patient, who had lost about a pint of blood, fainted, and the bleeding ceased, nor did it come on again. The woman recovered completely.'

Dupuytren's Case, referred to by SIR W. FERGUSSON.

'At the worst the accidental division of the vessel (obturator) does not appear to be fatal in all instances, as one case (occurring in Dupuytren's hands) proves, wherein the vessel was wounded, and the occurrence was not even suspected until the death of the patient three weeks afterwards from disease of the bowels, when a clot of blood in the site of the orifice led to the detection of the injury.'

This case I have searched for in Dupuytren's works, but have not been able to find, but we can accept it on Sir W. Fergusson's authority.

Hey's Case.

Hey, p. 160, relates a case in which, in operating on femoral hernia, 'he cut directly upwards, and as a consequence opened an artery, which bled freely, but of which neither he nor the gentleman who assisted him could discover the orifice.' As his cut was not on that side of the intestine which was most distant from the femoral artery it is probable that the epigastric was cut through, it may have been the obturator. However, finding it impracticable to take up the vessel, he compressed the bleeding spot with graduated sponges and bandage and arrested the hæmorrhage, the patient recovering completely.

Mr. Corley's Case. Irish Hospital Gazette, April 1873.

A female, æt. 55, a very unfavourable case for operation at the time, owing to great exhaustion, was operated on in the

usual way, on December 15, 1872, at Jervis Street Hospital, Dublin, for femoral hernia. 'The extent of the incision was extremely limited.' The moment the intestine was returned a gush of arterial blood took place. This was controlled by passing a curved needle through the ring and bringing it out immediately above Poupart's ligament and passing a figure-of-eight suture over it. 'No recurrence of hæmorrhage took place, and not more than three ounces of blood had escaped before the bleeding was controlled.' The patient gradually sank, and died thirty hours after operation.

Post mortem.—Artery and vein had both been injected. On raising the peritoneum about 4 oz. of clot were found in the subserous tissue. The obturator artery sprang from the epigastric about ¾ inch from origin of latter. It was about the size of No. 3 bougie, and took the dangerous course over neck of sac. It was completely severed. The cardiac end was firmly occluded by clot. The distal end was 1½ inch from the cardiac, owing to retraction, and was open. The acupressure needle had not embraced the artery. The cause of death was evidently exhaustion, accelerated by loss of blood.

In several other particulars this case precisely resembled my own case with which this paper commences.

XLII.—*A Case of Tinea Circinata, complicated with Tinea Versicolor.* By Malcolm Morris. *Read May* 10, 1878.

A. M., a young woman, aged 19, was sent to me by Dr. Fothergill, of the West London Hospital, on April 29. Is employed in a laundry, and perspires very freely when at her work. Has never worn flannel next skin. States that eighteen months ago she was nursing children who had ringworm of the head; that she, at that time, noticed a small red spot on the left side of the neck. The spot gradually increased in size, at the same time disappearing in the centre, so that a bright erythematous raised ring was left with healthy skin within its area. On examination I found several rings of tinea circinata, but as well as these rings there was to be seen, in their centre, a brown scaly discoloration, resembling tinea versicolor. This view proved to be

correct, as the microscope showed the characteristic grouping of the spores, peculiar to this disease. The brown patches extended over the greater part of the chest and back, as well as in the intervals between the rings of tinea circinata. In the patient's opinion the brown eruption appeared first in January, certainly not before Christmas. If this is the case it is more than a year after the first appearance of the ringworm. The point to which I wish to call the attention of the Society is the fact that one of these parasites could grow where the other could not; it is, as far as I can learn, unique, and therefore of interest in the clinical history of these diseases.

I am indebted to Dr. Sangster for kindly preparing the microscopical specimens.

XLIII.—*A Fatal Case of Yellow Fever, occurring in London.* By ALFRED LEGGATT, and W. S. GREENFIELD, M.D. *Read May* 10, 1878.

D. æt. 52; single; thin, wiry, of middle height, and active habits, accustomed to good living, drinking a bottle of wine daily. A retired cavalry officer; had served in India (Lucknow, Benares, &c.), and while there had no serious illness. Left India about 1865 or 6, and retired from the service in 1867 or 8.

About that time had hæmoptysis, and some affection of right lung. For four or five years past had gone for the winter months to a warm climate, first to the Mediterranean, but for the last two years to South America. Left England for the latter on January 9, 1878. Landed at Rio de Janeiro on January 30, and again between February 21 and 24, when an epidemic of yellow fever was prevalent in the town and shipping. He left Rio on the 24th, arrived at Lisbon on March 14, and at Southampton on the 17th. In the Bay of Biscay there was a strong head wind and a good deal of sea, and the weather there and in the Channel was cold (at Brest, 42° F.).

He came to London on the 18th, when the weather had become warmer and continued so till the 21st (a mean of 54° F. for the four days, with prevailing westerly winds). Enters in his journal for this day: 'Very seedy—bilious I suppose.' But he did not mention this to the author in an

interview on the 19th. He said then that he never was better, but that the appetite was not quite so good as usual. There was nothing noticeably wrong with him on that day. Mentioned that he was 'seedy' in the Bay of Biscay, but accounted for it by the weather and sea. Knowing that he had been for some time drinking a bottle of champagne daily the urine was examined—an average, from 11 p.m. to 8 a.m. It was acid, clear, almost colourless, had a sp. gr. of 1003, and contained no albumen. No examination had been previously made, as patient had been seen only twice before, in the autumn, for a trifling ailment.

Tincture of gentian, in effervescing potash and soda, were ordered.

On Friday, March 22, Mr. L. was sent for. Patient stated that, after dining well with a friend the previous evening, he had felt, before going to bed, chilly and unwell: shivered, and was very sick during night, ejecta not observed. At 12.30 p.m. was oppressed, complained of headache, pain in back and limbs, and loathing of food. Bowels not moved since previous day. Tongue white; pulse over 100. To take his usual dose of 'Tamar' at night, and effervescing citrate of soda and potash. Milk and soda water, and tea.

Saturday, March 23 (second day), noon.—Very restless night. Purged freely, motions not observed. Vomited frequently during night: about 6 oz. of black coffee-ground vomit, with mucus, was shown. Patient extremely depressed and silent: asked if he had yellow fever. Pains in head, back, and limbs continue, and there is the same loathing of food, but he takes some milk and soda water iced, and tea. Tongue coated in centre with pale drab fur, moist, red at tip and edges. Pulse 108, of fair strength. Temperature 101·3° in mouth. To continue effervescing draughts.

In the evening had moved back into a larger and more comfortable house, in an airy street, from which he had moved on 20th into his own, which was in confusion. Pains in head and back gone. Very thirsty. Frequent motions of shreddy mucus, in pale whey-like liquid, not abundant. No urine separate, and but little with motions. Pulse 94. Temperature 100° F.

Sunday, March 24 (third day), 10 a.m.—Very restless night, 'no sleep.' Vomited once, about ¾ of a pint of clearish whey-like liquid, with some milk curds. Frequent motions, same character as before. No urine separate. Patient very weak, oppressed, and lethargic. Face and conjunctivæ tinged

yellow, as if jaundiced. Great pain and tenderness in abdomen, especially in epigastrium and right hypochondrium. Thirsty. Pulse 48, irregular, weak. Temperature 98·6° F. Takes but little nourishment. To have a grain of calomel, and effervescing citrate of soda. A teaspoonful of brandy, in soda water, iced, every three hours.

Heard from patient to-day, for first time, of the existence of yellow fever at Rio, and of the death of two officers on board his steamer on voyage. This was in answer to my questions, which were prompted by information given by a friend the previous evening. Patient volunteered no information.

Vespere, 9 p.m.—Motions very frequent, and of same character; some urine said to pass with them, but it must be very little, if any. No sickness since morning. Begs for sleep. Insists on getting out of bed when bowels act. Pulse 60, less irregular and stronger. Eight minims of laudanum in arrowroot enema.

Monday, March 25 (fourth day).—Enema retained 1½ hours. Slept at intervals for some hours. No sickness in night. Two small, drab, pultaceous, feculent motions. About three drachms of urine passed, of sulphur yellow colour, neutral, and containing ⅓ albumen. Took a few teaspoonfuls of brandy, but now refuses it. Takes but little milk, drinks barley water, iced. Thirsty. Feels extremely weak. Yellowness of skin spread to trunk and limbs, colour deeper. Pain and tenderness in regions of stomach and liver increased. Tongue same colour, mouth rather dry. Pulse 60, of fair strength, regular. Temperature 98·3° F.

2 p.m.—Dr. Hawksley, the patient's old medical friend, saw him. 2 gr. of calomel and a grain of opium were given. Warm water compress to region of liver, and wide belt of impermeable piline. Skimmed milk with ice in it for food.

Vespere, 9 p.m.—On entering room to-night found patient's manner quite changed. He said sharply, 'I am quite well; have lost this pain,' pointing to right side. This was apparently the effect of the opium. Has had two small liquid, pale drab, feculent motions. Vomited once after a teaspoonful of cherry brandy. Clearish liquid, coloured by ch. br. Pulse 60. Temp. 98·2° F. Takes a little milk with ice.

Tuesday, March 26 (fifth day), 8.30 a.m.—Has vomited three times in night: 4 oz. of clearish liquid with sediment like beef-tea grounds; 2 oz. with darker sediment, blackish.

Has taken nothing but 2 oz. of tea, and a little iced barley-water. Distressing hiccough for three-quarters of an hour together. Very weak and torpid, but irritable; conjunctivæ yellow and injected. Pupils contracted. Pain and tenderness in abdomen much relieved. Still thirsty. Tongue as before. Pulse 60, fair strength. Had 2 grains of calomel in afternoon, and ½ a drop of creosote.

Vespere, 9 p.m.—Drs. Murchison and Hawksley saw patient. Manner altered: sharper, and a little jocose. Drank our health in barley-water. Has vomited 4 times: same clear liquid with beef-tea-looking grounds, and once black altered blood, in flakes, in same liquid—about ¾ of pint altogether. Has passed no urine for 60 hours, and no signs of any in bladder. Some epigastric tenderness still. Area of liver dulness but little altered, rather smaller, if anything, than natural. Fœtor of breath. Lower lip livid and swollen. Tongue moist: no sordes. Pulse 60. Temperature 99° F. in axilla. To take 5 grains of calomel. The whole trunk to be enveloped in piline, wet with inf. of digitalis, four times officinal strength, with a view to act on kidneys.

Wednesday, March 27 (sixth day), 8 a.m.—At midnight had a convulsion, followed by 20 minutes of unconsciousness. Four convulsions since, each followed by unconsciousness. No urine or motion. Vomited several times in the night: about 8 oz. of a clear, pale liquid, and 4 oz. of a dark liquid, with a considerable quantity of dark coffee-ground sediment. Took ¼ of a pint of milk, and some iced barley-water in night. Mind wandering, not rational. Skin, dark yellow. Conjunctivæ still injected, and yellow. Pupils contracted. Mercurial fœtor of breath. Lower lip black. Ecchymosis apparently. Tongue dry and brownish. Pulse 60, feeble. Temperature (mouth) 98° F.

1.30 p.m.—A drop of croton oil was given. This was immediately followed by a strong general convulsion, with grinding of teeth, during which pulse was almost imperceptible.

3.40 p.m.—Dr. Murchison and Dr. Hawksley again saw patient. Digitalis had produced no effect, but was continued. Patient semi-comatose; did not recognise us. A few purpuric spots on right instep and front of right leg. No sickness since night. Another drop of croton oil was given.

Vespere.—No motion, or sickness, and no urine for 79 hours. A violent convulsion came on at 8 p.m., after which the patient became comatose, and died at 9.30 p.m.

The post-mortem examination was made by Dr. Greenfield, in the presence of Drs. Murchison and Hawksley, Mr. F. M. Mackenzie, and Mr. Leggatt.

Notes of Post-mortem Examination by Dr. Greenfield, *March* 29, 1878, *at* 4.30 *p.m.*

Examination 43 hours after death. Weather cold (snow).

Body of strongly-built muscular male of middle age; medium height; well nourished.

Rigor mortis well marked, both in upper and lower limbs.

The entire surface of body of deep brownish-yellow colour, resembling somewhat that seen in intense jaundice, but more uniform, and of more brownish tint; conjunctivæ also of deep yellow colour. No petechiæ or ecchymosis to be discovered anywhere on trunk or limbs (back not inspected). No anasarca. The whole of the lower lip, including the mucous surface, swollen and black, as if from ecchymosis (this was not cut into).

Post-mortem congestion of dependent parts well marked. Very deep staining of the skin over ramifications of veins in upper part of both thighs, and over lower part of abdomen, and, to a less degree, over the more dependent parts of thorax (this post-mortem staining being greater in degree than that usually seen at a similar stage of decomposition). Slight greenish discoloration for some distance above Poupart's ligament, especially on right side.

Abdomen not obviously distended. A layer of subcutaneous fat, about $\frac{3}{4}$ inch in thickness, over whole surface.

Peritoneum natural (without post-mortem serous exudation). Liver only visible between ensiform cartilage and ninth rib, about $\frac{3}{4}$ inch below ribs, not reaching the lower costal margin in right mammary line. Spleen small, lying far back in left hypochondrium.

Stomach contained a quantity of blackish fluid, thin, and without clots or solid masses, resembling altered blood in colour. No perceptible odour of gastric juice.

Mucous membrane of stomach pale, and of natural appearance, except very slightly yellowish, as from bile staining. An entire absence of congestion or ecchymosis; no sign of catarrh; glands near pylorus not prominent.

Duodenum, containing similar fluid; its mucous membrane pale; free from swelling or catarrh; no ecchymosis.

The walls of stomach and duodenum somewhat easily torn (possibly from post-mortem change).

Intestines not further examined. Externally they appeared healthy; very slightly distended with gas.

Spleen small (i.e., of normal size, not more than 3½ inches long, 2½ inches wide, weight about 2 to 3 oz.—not weighed), firm, its surface somewhat discoloured by post-mortem changes; substance firm, somewhat dark, but of absolutely healthy appearance on section.

Pancreas on section normal (stained with blood from post-mortem change).

Suprarenals not carefully examined.

Liver of normal size, or rather smaller than natural: no abnormal adhesions. Organ of natural shape, surface smooth, capsule translucent and free from thickening or shrivelling; edges somewhat rounded, but not very markedly so. Its colour on surface (except where darkened by post-mortem staining) a rather clear pale yellow, uniform over entire surface.

On section, consistence firm, but not abnormally so; sectional surface fairly smooth, of rather uniform bright yellow colour; outlines of lobules everywhere distinct, but not more so than natural; the lobules, if anything, rather smaller on an average than normal. On close inspection the centre of each lobule presented a rather deeper and more greenish-yellow colour than the periphery, as from bile-staining. No sign of infiltration around lobules.

The organ for the most part free from evidence of decomposition, but in the left lobe were here and there some small tracts of greenish colour around portal canals, as from transudation of decomposed bile. Blood in portal and hepatic veins fluid, their lining membrane stained with blood (as everywhere else).

Gall-bladder.—Walls of gall-bladder emphysematous; it contained a small quantity of dark brownish bile; its mucous surface natural.

The cystic, hepatic, and common bile-ducts laid open through their entire length: they contained bile, and were normal and patent throughout.

Kidneys.—Of normal size (not weighed), firm, slightly too adherent to surrounding fat. Capsule very slightly too adherent, but free from thickening. Surface uniform and smooth, except that each presented a few minute depressions a line in width, as from old infarcts. No cysts in cortex.

On section: each presented signs of commencing decomposition (blood-staining in neighbourhood of hilus, minute gas-bubbles in pyramids and interpyramidal cortex).

Cortex of normal width, uniform outline, uniform somewhat pale chocolate-red colour, this colour also continuing into bases of pyramids, which were somewhat ill-defined. No staining around bases of pyramids. Medullary rays natural. No fulness of venæ stellatæ. Papillæ at tips, and for a short distance, presented a pale somewhat yellowish colour, extending in narrow lines for a variable, usually short, distance up the pyramids.* The sections of the cortex decidedly firm and fleshy, with rather sharp edge. Sections in the situation of superficial depressions showed old, atrophied, cicatricial patches, extending through the cortex (resembling in every respect those due to old plugging of the arteriole of one medullary cone).

Bladder contracted. Not further examined.

Pericardium natural. No post-mortem exudation. No petechiæ to be seen on minute examination of visceral layer of pericardium. A layer of fat covering anterior surface of right ventricle.

Heart, of natural size; ventricles uncontracted; cavities containing very little dark fluid blood; no clots. Valves natural. Slight chronic thickening at attachment of aortic semilunar valves. Endocardium generally blood-stained, rather more so on left than right side. Wall of left ventricle completely uncontracted, perhaps slightly thicker than natural; muscular tissue pale yellowish throughout, and friable, but whether from disease or post-mortem change could not be determined.

Pleuræ, empty, natural, with exception of an adhesion at apex of right lung, not more than an inch in area, but very firm and fibrous. Beneath pleura, over posterior aspect of lower lobe of right lung, a few spots of ecchymosis; none in right.

Lungs for the most part light and spongy and crepitant; but on section in both lower lobes are scattered hæmorrhages varying in size from a No. 1 shot to a pea; these are of deep blackish-red colour, uniform, and project slightly above the cut surface, and are quite distinct from spots of blood-staining seen elsewhere. The lung-tissue elsewhere somewhat emphysematous, slightly blood-stained, and with some bubbles of gas from decomposition. At the right apex, continuous with the patch of pleural adhesion, are some dense fibrous bands, containing cretified and soft fat-like nodules; the entire

* I think due merely to the normal fibrous stroma of the papillæ stained with bile, and not blood-stained.—W. S. G.

area affected not more than a cubic inch in extent. No more recent disease. Left lung entirely free.

Other organs not examined.

Portions of the liver, spleen, kidneys, and wall of the left ventricle were reserved for microscopic examination, and placed in strong spirit to harden.

Blood.—The *blood* in the large vessels, and in the heart, as well as in all the veins, was of a dark brownish-purple colour, with scarcely any coagula; it contained also minute bubbles of gas. The condition was that usually seen in cases of rapid decomposition after fever, and it could not be determined how much was due to post-mortem change. The blood was not examined microscopically.

Microscopic Examination of the Liver, after hardening in alcohol. Sections, stained and unstained, mounted in various ways.

The normal outline of the lobules was well preserved, and, in many places, even better marked than natural. Under a low power they were seen in many places to be separated by exudation in the portal spaces, which in some parts extended also into the portal fissures. Each lobule showed at parts bright yellowish staining, in some at the centre, in others at the periphery of the lobules. In many places the rows of liver-cells had their normal arrangement and appearance, but everywhere throughout the section were scattered areas having a more homogeneous appearance, with only one or two liver-cells here and there.

With a higher power the exudation in the portal spaces was found to consist of leucocytes crowding the connective tissue around the vessels; some of the vessels were also filled with leucocytes. The bile-ducts were, in many places, filled with swollen epithelium; some appeared normal.

The most affected tracts of the liver-substance did not follow any regular distribution. Generally they were, perhaps, more marked in the central parts of the lobules, or in a zone intermediate between the centre and the periphery, so that towards the outer part of the lobule would be seen rows of normal cells running inwards, and in some also an inner circle of normally-arranged cells.

The changes seen in the liver-cells were the following:—Some of them retained their normal shape and arrangement, but their protoplasm was more granular than natural, and they contained a quantity of granular bile-pigment, either in

masses or clustered around the nucleus. The cells also appeared to be more fused together than natural.

The greater part of the cells were, however, in various stages of alteration. In many parts the normal arrangement of the cells was entirely lost, only a confused mass of fragments mingled with nuclei being visible. On comparing different parts of the section, the various stages of the change could be traced. The hepatic cells appeared first to swell up, so that the adjoining cells were fused together, the nuclei at the same time becoming swollen and more distinct, in some distinctly vesicular or vacuolated. In some the number of nuclei appeared to be increased. Then follows what seems to be a fragmentation of the cell, which splits up into a number of fragments, some containing nuclei, others not; and then result a number of more or less angular or rounded masses of small size, some of which stain well with logwood, others not at all, some contain a quantity of granular pigment, others small oil-globules. In sections stained with logwood, a very marked increase in the number of nuclei is visible, but how many of these were in the cells, and how many in the capillary network it is difficult to say.

In sections stained with osmic acid (of which some beautiful preparations were made by my friend Mr. T. O. Acland) the morbid changes could be especially well studied. On examination with a low power, many of the lobules were seen to be encircled by a dark band, showing some fatty degeneration at the periphery; but when seen with a high power this fatty change appeared less marked. The oily lobules, many of them small, and the areas of breaking up of the cells, were in some places almost free from oily change. So that the parts in which the special morbid change occurred were in marked contrast with the fatty degeneration, which I should be inclined to regard, together with part of the interstitial change, as probably chronic.

The acute morbid changes appear then to be inflammatory interstitial exudation, most marked at the periphery of the lobules, but also seen in their substance, accumulation of bile-pigment in the hepatic cells, swelling of these cells, multiplication of their nuclei and fragmentation, followed by complete destruction and breaking down, with some fatty degeneration, in fact a true parenchymatous and interstitial hepatitis.

Kidneys.—In the kidneys the condition found exactly resembled that seen in the earlier stages of acute parenchy-

matous nephritis. The convoluted tubes of the cortex presented marked swelling and proliferation of their epithelium, a large number of them being completely filled by the epithelial masses; in some few of them recent blood-casts were found. There was no sign of fatty degeneration of the epithelium.

Some of the straight tubes in the cortex contained yellowish waxy-looking casts, but these were not numerous. In the pyramids some of the straight tubes also contained large yellowish hyaline casts, their epithelium was slightly swollen, and here and there were some small epithelial casts. A few of them contained blood. The looped tubules of Henle were mostly natural.

In addition to these more recent changes were found some of more chronic character, the earliest stages of chronic interstitial nephritis, viz., thickening of the capsules of some of the glomeruli, and small patches of fibroid degeneration in their neighbourhood. Otherwise the kidneys appeared healthy.

None of the so-called phlyctenular abscesses were found. I did not find any crystals of leucine or tyrosine in the kidneys, such as have been described by some authors.

Spleen.—The structure of the spleen was perfectly normal, with the exception of some chronic fibroid thickening around the vessels.

The morbid appearances in this case correspond, in a great measure, with those which have been described by many authors. One or two important differences must be noticed.

The *stomach* is said to be, almost without exception, in a state of acute catarrh, with marked injection of the vessels (Haenisch in Ziemssen's 'Encyclopædia'), or presenting ecchymosis or hæmorrhagic erosions (Crevaux, Lobo).

These conditions were entirely absent in the present case; the mucous membrane of the stomach was quite pale, there were neither erosions nor hæmorrhages. Possibly microscopic examination might have shown some fatty degeneration of the epithelium, such as has been described, but unfortunately none of the mucous membrane was preserved.

The state of the lungs.—Subpleural ecchymoses and hæmorrhages in the lower lobes have been very often observed (Crevaux, Lobo, Haenisch).

The *spleen* also is usually free from affection in yellow fever, this being one of the most remarkable facts in the morbid anatomy of the disease.

It is usually stated that the condition of the *liver* is one

of acute fatty degeneration, preceded by congestion. Thus Dr. Crevaux says:—'The prismatic cells alter in shape, become more or less globular, and contain fine granules and globules of oil.' Dr. Gama Lobo says that there is fatty degeneration both of the liver-cells and of the connective tissue of the vessels. Haenisch says:—'The liver-cells are very pale, slightly granular, the nucleus concealed; they are filled with numerous fat-globules, the latter often attaining such a size that a single one fills almost half a cell. The form of the liver-cells is not changed. The whole organ strongly reminds one of the fatty degeneration so often found in topers (Leidy).'

The changes found in the liver, in the present case, therefore differ much from those often described. The fragmented condition of the liver-cells, apparently due to an active process of division, strikingly resembles that seen in the cells of the convoluted renal tubules. It is true that some fatty degeneration was found, but by no means as the most important change, and it was by far most marked at the peripheral part of the lobules, indicating that it was of antecedent origin.

So far as I can judge the condition most resembles that described by Frerichs as occurring in acute yellow atrophy of the liver, i.e., so far as the microscopic changes are concerned; the macroscopic condition differs in the entire absence of shrinking of the organ, and of a shrivelled or puckered condition of the capsule; moreover, the changes were very much less in degree than those observed in acute yellow atrophy. W. S. G.

Remarks.—On the third day of the illness, after mention had been made of the exposure of the patient to infection, the suspicion arose that the case might be one of yellow fever. And this suspicion day by day grew into conviction. The diagnosis, however, was for a time doubtful; for, on the one hand, the symptoms bore a resemblance to those of acute atrophy of the liver; and on the other, as was also thought possible by Dr. Murchison, they might be accounted for by the existence of some chronic state of disease, both in the liver and kidneys, upon which acute mischief had supervened.

But the latter view was negatived by the post-mortem appearances, and the question of acute atrophy appears to be disposed of by the following arguments:—

1. The mode of commencement was sudden, with rigors and fever, head-ache, and pain in the back and limbs, whereas in most cases of acute atrophy there are premonitory symptoms in the form of derangements of digestion; or, if these be absent or overlooked, and the disease appears to commence suddenly, the symptoms which mark the onset are jaundice and delirium. Here it was not so.

2. The absence of leucine and tyrosine from the tissue of the liver and kidneys. Their presence would not have excluded yellow fever, but there absence is a strong argument against acute atrophy.

3. The protracted suppression of urine observed in this case is not uncommon in yellow fever, whereas in acute atrophy Frerichs observes: 'The urine, according to my observations, has always been secreted in normal quantity' (Syd. Soc., Translation. i., 220).

4. The circumstance that the patient had been exposed to the infection of yellow fever, and that three other persons similarly exposed took the complaint, of whom two died.

5. That certain of the post-mortem appearances should have resembled those found in the early stage of acute atrophy is not surprising, seeing that other of the acute specific diseases, such as typhus and enteric fever, have been known to produce acute atrophy. Buhl considers the changes which the liver undergoes in typhus fever as the commencement of acute atrophy.

6. The low temperature after the first two or three days would be accounted for by the uræmia consequent on the suppression of urine. And the symptoms above recorded are such as have been observed in cases of undoubted yellow fever.

It was therefore concluded that the above case was one of specific yellow fever.

It may be stated also that the above views and conclusion have Dr. Murchison's entire concurrence.

Some account of the state of the weather during the latter half of March may be of interest in connection with this case.

From the 14th to 17th, during the passage through the Bay of Biscay, and up Channel, the temperature at Brest was 42° F. There were strong easterly head winds, and a good deal of sea. From 18th to 21st, after landing, the temperature in London was 48° F., with a maximum from 51° to 55°, westerly winds. From 22nd to 31st 56° F., with prevailing

N., N.W., and N.E. winds, severe frosts at night, and snow.

At such a temperature there was but little fear of the spread of the fever by infection. But the usual means of disinfecting were employed, and no other case occurred.

It is not known at what temperature the poison of yellow fever becomes inoperative; * but it has hitherto been taught that at a temperature below 60° F. it becomes inert.

It was found, however, in 1855, that at Cuzco, in the Peruvian Andes, at an elevation of 11,000 feet, and where the thermometer rarely rises above 65° F. in the shade, a deadly epidemic of yellow fever could exist and propagate itself for many months, so as to carry off nearly half the population of the district. And that in Cerro Pasco, at an elevation of 14,000 feet, and with a temperature of 44° F. for the months of July, August, and September, a similar epidemic could, during those months, maintain itself, and produce results almost as fatal (Dr. Archibald Smith on Yellow Fever of Peruvian Andes, 'Trans. of Epidemiological Society,' vol. i. Dr. Scrivener on Yellow Fever in Monte Video, 'Medical Times and Gazette,' Nov. 16, 1872).

The above experience is so opposed to the usually received doctrine, that it will be a matter of great interest in the future to ascertain whether, in latitudes more remote from the equator, and at lower elevations, where such temperatures as those above quoted are met with, the existence of an epidemic of yellow fever is possible: for there appears to be no *à priori* probability that mountains in the tropics of the southern hemisphere should be a more favourable *habitat* for the disease, than would be found in cooler and lower-lying countries nearer the poles.

The highest northern latitude yet reached by yellow fever is that of Swansea, in our own country, 51° 37′ N. The disease was imported into that town, in September 1865, by an infected vessel, the *Hecla*, from Cuba, with a result of 22 undoubted cases with 15 deaths, and of 6 doubtful cases with 1 death. The temperature of the month was 65° F., and there was scarcely any rain and but little wind. The outbreak appears to have been brought to an end by the re-

* It is stated by some American physicians that it is not *destroyed* at a temperature above 32° F., and that at higher temperatures it is only dormant ('Annual Report of Marine Hospital Service of United States for 1874,' pp. 225, 399).

moval of the infected ship to a distance, and by the fall of the thermometer in the first 14 days of October to 61° F.

There can be no doubt that the teaching of former years as to the temperature at which the poison of yellow fever ceases to act was justified by extended observations made in many epidemics, and by the experience of infected ships proceeding from a warmer to a colder climate for the purpose of arresting the spread of the disease among their crews.

Nevertheless, after the experiences of the Peruvian physicians, it is evidently most important that the spread of infection in our ports or towns should be carefully guarded against on the arrival of any infected ship, or the occurrence of isolated cases among us.

An interesting point as to the length of the period of incubation in yellow fever is involved in the above case. This is generally supposed to be from 1 to 15 days; but cases are narrated giving a longer period, of 17 or 18 days, (Pamphlet on 'Yellow Fever at Buenos Ayres,' by Dr. J. Alston, Buenos Ayres), and in the present instance a period of 25 days is probable.

The facts bearing on this point are as follows:—

The subject of the attack landed at Rio de Janeiro on his outward voyage about January 30, when an epidemic of yellow fever existed there. He went up to Petropolis, but returned next day to the ship, and proceeded in her to Buenos Ayres.

On February 12, while the ship was in quarantine, the assistant purser died of yellow fever. During part of the illness he occupied a cabin opposite to that of D., but was removed. This officer had been ashore at Rio for one hour only. On February 15 the vessel left Buenos Ayres, and arrived at Rio on the 21st. Here D. again went on shore, but probably not for any length of time, and he slept aboard. The mortality from the fever at Rio at that time was said to be 100 a week. On the 24th the vessel left Rio. D. in his journal complains of 'horrid stinks aboard.'

Two days later, when the vessel touched at Bahia (at that place and at Pernambuco where she also touched, there was no yellow fever), two of the crew who had never quitted the vessel after she left England failed with yellow fever. One recovered; the other died (the 5th engineer) on March 5, in lat. 8° 13′ N., long. 27° 42′ W. D. enters in his journal on this day: 'Cool nights, hot days, rather seedy, cold.' These cases were carefully isolated, and disinfectants were

freely used, and no one in attendance on the sick and no other person in the vessel took the complaint.

It would appear probable, therefore, that, as in these three cases the infection was evidently taken at Rio, so, in the present instance, the disease was also contracted there. If so, there was an incubation of 25 days—from February 24 to March 21.

It is possible, however, that the infection may have been taken from the ship, though it should be remembered that no other person on board appears to have taken it. If this were so, it would probably be before the vessel had reached a latitude where the temperature would be below 60° F., and this would occur about March 12, when she was in lat. 34° 21′ N., long. 13° 44′ W., near the isothermal line which passes through the Straits of Gibraltar, and is then depressed towards Madeira, and has a mean temperature for March of 58° F. The temperature at Funchal on that morning, at 8 A.M., was 62·6 F.—that is, in lat. 32° 40′ N.* This gives an incubation of at least 9 or 10 days. Dr. Currie, the surgeon of the ship, who has kindly furnished information, is of opinion that the infection was taken at Rio.

It may be mentioned that Dr. Aitken, in his 'Practice of Medicine,' states it as his opinion that the period of incubation in yellow fever will be found to lengthen with the transportation and propagation of the disease into latitudes the most remote from the equator (vol. i. p. 487).

A. L.

XLIV.—*Two Cases of Lupus.* By W. Spencer Watson. *Read May* 10, 1878.

Case I.—*Lupus of the Superciliary Ridge, Eyelids, and Root of the Nose: treated by the application of lunar caustic and internal remedies.*

R. B., æt. 28 years, a policeman, but formerly in the army, a well-built and fairly well-nourished man, was kicked in the face five months before he was admitted into the Royal South London Ophthalmic Hospital, on April 19, 1870. Ever since the injury there had been swelling and ulceration of the region of the right eyebrow and eyelids. Before this

* I am indebted for this information to the kindness of the secretary of the meteorological office, R. H. Scott, Esq.

he had enjoyed good health, had never had sore-throat, nor any other symptoms suggestive of syphilis; and he distinctly denied ever having had syphilis. On admission, his breath had an offensive odour, as if from excessive drinking. Along the inner half of the right superciliary ridge was a curvilinear row of ulcers; and extending downwards from this, over the root of the nose to the lower lid, the skin was of a dusky red colour, swollen, thickened, and studded with ulcers and nodules, of a kind similar to those on the eyebrow. In the affected region all the natural folds and curves of the lids were lost, the surface extending uniformly and evenly up to their margin. Most of these ulcers were crusted over, and the cellular tissue around them swollen and indurated, the eyelids being also very much puffed in their immediate neighbourhood.

He was put upon liq. potass. arsen. (♏v. t.d.), and zinc ointment was applied during the day, with warm poultices at night.

A few days after the solid caustic was applied freely and forcibly to the ulcers, and this was repeated every three or four days for about a fortnight. On each application of the caustic the bases of the ulcers broke down very easily and bled freely.

May 3.—The ulcers are rapidly healing. The general aspect being much improved.

12.—Ulcers all healed. There is a tendency to excoriation of the margins of the newly-formed granulations. A ten-grain solution of nitrate of silver was applied to this excoriated surface.

20.—A few small ulcers had again broken out on the bridge of the nose. The solid caustic was applied to these, and a 20-grain solution to the desquamating edges of the reddened surface. The patient had now been taking cod-liver oil and iodide of iron for some weeks, having discontinued the arsenic on finding that it disturbed his stomach.

24.—There being now considerable thickening of the subcutaneous tissue at various points, with increased redness and swelling, the iodide of potassium was given in 16-grain doses, twice daily, and simple cerate and cotton wool were applied to the affected surface.

In the early part of June it was again necessary to apply the solid caustic several times to small ulcers along the margins, and the 20-grain solution to the desquamating surface.

On June 7 there was much improvement, and on the 10th

all the ulcers had healed, and the subcutaneous thickening much diminished. He had been taking 32 grains of iodide twice a day up to this date; from this time he took it only once daily.

On July 12 healing was complete, and the aspect of the patient was such as is represented in a drawing exhibited.

CASE II.—*A Case of Lupus of the Nose and Cheek, treated by the forcible application of solid nitrate of silver and internal remedies.*

J. R., æt. 34 years, a cabinet-maker, a pallid, ill-nourished man, came as an out-patient to the Great Northern Hospital, on November 8, 1877, with an ulcer of the size of a horse-bean on the cheek, near the right ala of the nose. It was surrounded by a dull-red and swollen areola, its surface being covered with crusts, which when removed disclosed a pale, unhealthy, non-granulating surface. A cicatrix on the centre of the right cheek indicated the position of former ulcers, and several similar cicatrices were noticed on the left cheek. He had never had syphilis, nor any serious illness, but had lately been living badly, sometimes getting scarcely sufficient meat. His father and brother both died of lung affections, with spitting of blood; and a brother still living has 'weakness of the chest.'

He was put upon a mixture of arsenic and iron, and ordered two drachms of cod-liver oil every night. Vaseline was applied to the ulcer, and dry cotton-wool over the whole of the cheek and nose. At the end of a month's treatment, the ulcer, which at first gave signs of healing, began to spread, and in a few days several other similar sores broke out on the cheek and side of the nose, each ulcer being surrounded by a dull-red swollen areola, so that the lower part of the face and nose had an appearance of threatening erysipelas. Each ulcer when exposed became very soon encrusted with a yellowish gum. To remove this poultices were used from time to time.

In spite of treatment by increased doses of arsenic and the use of opiates at night, the ulcers spread and deepened till January 24, 1878, when he was admitted as an in-patient, for the purpose of having the caustic applied effectually.

His condition on admission is thus described by Mr. Gillam, the house-surgeon:—'Fairly well nourished; somewhat sallow complexion; apparently has a lymphatic tempera-

ment. No symptoms of phthisis. On the right cheek and nostril there are seven or eight ulcerations, somewhat circular in form, and varying in size from that of a pea to a bean—from them a slight discharge flows. These ulcerations (he says) are rapidly increasing in depth, and occasion much pain. Scarcely any inflammatory action round the seats of ulceration.'

On January 25 a solid stick of nitrate of silver was rubbed with some force into the soft tissue lining one of the ulcers, and into the areolar tissue beneath its edges. This process was repeated on the 28th and 31st, different ulcers being attacked on each occasion. The patient meanwhile was taking drachm doses of syrup of iodide of iron and an equal quantity of cod-liver oil twice daily. After each application of the caustic a dose of 3 grains of the compound soap pill was given, and this was repeated twice each day. The ulcers rapidly improved in appearance, and on February 4 (less than a week after the last application) several of them had quite healed. On February 10 (ten days after) all had healed. On February 19 the man was discharged cured, and remains so up to this date.

A very marked improvement in the surrounding appearance of erythema took place after the discontinuance of the poultices and the substitution of a pad of cotton wool saturated with carbolic lotion (1 in 60). The wool used was that known as Brun's, and has the advantage of becoming thoroughly soaked with watery solutions, and not merely wetted on the outside, as is the case with ordinary cotton-wool. Probably lint would answer the same purpose.

Remarks.—The rapid improvement in this case is possibly not to be referred to any one cause by itself. I cannot but regard the use of the caustic as one very important factor in the chain of causes; but the warmth and improved diet of the Hospital, and the use of opiates, must be taken into account, and I am also inclined to give some credit to the antiseptic dressing employed. Poultices seemed at first to be soothing to the patient, and facilitated the separation of the crusts covering the ulcers, but they had a tendency to become sour very quickly, and there is reason to believe that the warm acid and possibly putrid mass of moist linseed meal, was sometimes a cause of increased irritation. The very decided diminution of the redness surrounding the ulcers, as soon as the cotton wool with carbolic lotion was substituted for the poultices, was noticed by all who saw the patient.

The resulting deformity is slight. No portion of the ala is wanting, nor is the nose much altered in shape, though deep pits and cicatrices are left on it and on the adjacent parts of the cheek. The most noticeable trace of the disease is a slight narrowing of the lower aperture of the right nostril from the contraction of a cicatrix between the ala and the upper lip. There are no stains left by the caustic—a result said to be sometimes produced by this plan of treatment, and used as an argument against its employment.

XLV.—*A Case of imperfect Right Hemiplegia, with slight Aphasia, Double Optic Neuritis, and temporary Obliteration of the Right Brachial Artery.* By THOMAS BUZZARD, M.D. *Read May* 10, 1878.

CAROLINE D., æt. 18, a fair, phlegmatic-looking girl, was brought to the National Hospital for the Paralysed and Epileptic, on December 19, 1877, suffering, according to the information received with her, from paralysis. By occupation a domestic servant, she had got into evil company, and was now sent to the Hospital from a 'Home for Fallen Women,' where she had resided a few days.

Her mind appeared to be in a very confused state; volunteering no information herself, she answered inquiries in monosyllables, and in the tone of one scarcely awake. She drawled out 'yes' with a prolonged lisp, and sometimes said 'yes' for 'no.' If she had to frame a sentence she would omit some words. She appeared to understand everything said to her.

It seemed, from the account given by the person accompanying her, that up to December 14 last she was quite well. On that day, and the day following, she complained of headache, and was very drowsy. On the 16th she fell down in a fit and lost consciousness. Next morning she complained of loss of power in the right arm.

In reply to my inquiries about her arm she said she could not use it, but presently, having to undress herself in order that her heart might be examined, I remarked that she appeared to use the right hand, in unlacing her stays, almost as freely as the left. When further questioned she rubbed the right forearm, and said she could not feel anything touching it. The heart and lungs were found normal.

There was no facial paralysis, nor strabismus. The tongue deviated slightly to the right, and was covered with white fur. Breath very offensive, the fœtor suggesting mercurialism. There was no salivation. The pupils were of medium and equal size.

On examining her eyes with the ophthalmoscope, I found in each the optic disc greatly swollen, and of a reddish tint, from the development of numerous minute vessels. Its border was not defined. The large veins, distended and very tortuous, disappeared suddenly here and there in the opaque swelling, to emerge again into view beyond the disc. These pathological characters were somewhat more strongly marked on the left than on the right side.

Her sight did not appear to be much affected, as she could read small print, but the mental condition made accurate examination on this point impracticable. At one time, in reply to an inquiry (for she volunteered no information), she said that she saw double, but afterwards explained that she meant that the light hurt her.

The patient was at once admitted into the Hospital, when further examination was made.

Sharp and continuous pain in the fore part of the head was complained of. There was no vomiting. A watch was heard 12 inches from the left ear, 4 inches from the right.

There was no marked alteration of gait, and she made no complaint about either of her lower extremities.

The left arm was normal. In the right there appeared, on close examination, to be loss of power for fine movements; she could not pick up a pin, nor button her dress with this hand. There appeared to be also complete cutaneous anæsthesia of the whole forearm, with the exception of the parts corresponding to the lower end of the radius, thumb, index, and middle fingers, in which sensation was quite perfect. This insensibility commenced a little below the middle of the upper arm. The condition was tested by pinching and pin-pricks.

The power of grasp with this hand was small, especially as regards the ring and little fingers. But the thumb and first two fingers were also weak.

Electrical reaction.—There was said to be slightly lessened irritability to the induced current in the muscles both on the anterior and dorsal aspect of the forearm. I did not, myself, confirm this.

Circulation.—No pulse was to be felt in the right radial

and ulnar arteries; the left were normal. On close examination it was found that the right brachial artery could be felt to pulsate as fully as the left, down to the middle of the arm, at which point the pulsations suddenly ceased. Some local tenderness to pressure was here alleged to be present, extending for about two inches in the direction of the vessel, and there was an obscure feeling of hardness and swelling on palpation. Pressure on the nail showed that circulation was still free, being carried on doubtless by collateral sources. The radial artery could not be felt at all; there was nothing like any thickening of its walls to be perceived. The urine was acid, of sp. gr. 1020; it contained no albumen, and no sugar. The pulse (left wrist) 96. Temperature 99°. The forearm was not swollen, nor was there any change in its colour or temperature, as tested by the touch.

Family history.—Nothing material to the case was elicited.

Personal history.—A servant by occupation, she acknowledged prostitution, but denied having ever had any venereal affection. Twice within the six months preceding this illness she had suffered from sore throat, which on one occasion lasted some weeks, and was accompanied by spots upon her chest. She had never had rheumatic fever.

Progress.—Next day her left pulse was 100. Temperature 99°. She would not take any food. The mental condition appeared unchanged.

On the 22nd she appeared somewhat better, and took food. It was found that sensation was quite recovered in the right arm.

On the 24th the patient said that she saw double. There was no apparent strabismus.

She was now ordered iodide of potassium, and in a very few days had greatly improved. The mental obfuscation vanished. She was able to use her right hand freely. The swelling of the optic discs became gradually less marked.

On January 30 it is noted that 'the patient was cheerful and comparatively bright. Answered questions freely, and without delay or drawling of words. The tongue still slightly deviated to the right. With her right hand she was able to button her dress, and indeed required no assistance in dressing. Could pick up a pin. When admitted she could not write, nor even hold a pen.'

At this time the pulse had been perceptible for a few

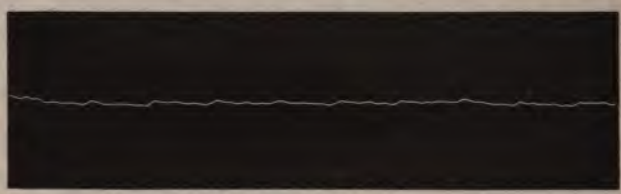
days in the right radial artery. An attempt to use the sphygmograph a week ago produced no result, but I now succeeded in taking the tracing which follows, and which is contrasted with that from the left pulse.

Right Radial.

Left Radial.

She continued to improve daily. On February 1 it is noted that 'the brachial artery can now be felt as distinctly on the right as on the left side, to a finger's breadth below the elbow joint.'

On February 16 the accompanying tracing was taken by Mr. A. E. Broster, resident medical officer.



Right Radial.

On February 22 I brought the patient to this Society, when the state of the radial pulse was noted by several members. The right pulse could be distinctly felt and counted, but

it was still appreciably smaller than the left. Mr. Brudenell Carter was also kind enough to examine her eyes with the ophthalmoscope. The effusion on the discs had, by that time, to a great extent disappeared; but the veins had not entirely lost their tortuosity, and the edges of the discs were not very sharply defined. At this time the patient's appearance was that of perfect health. The right limbs had entirely recovered their power; her sight was good; she had, indeed, nothing to complain of.

A few days afterwards the patient on being informed by the matron that she was to leave the Hospital began crying, and an hour later slid off her chair, having, as she said, lost all power in her right side. The circumstances under which it occurred, and subsequent observation, seemed to show that the powerlessness was closely dependent upon temper. It did not persist, and in a few days she left the Hospital. Below is a tracing which was taken by Mr. Broster, resident medical officer, on February 27.

At first the treatment of her case consisted of iodide of

Right Radial.

potassium in 10-gr. doses. On January 15 she was injected with at first 10 and afterwards 15 minims of solution of peptone of mercury, after the plan introduced by Professor Bamberger, of Vienna. Ten minims is equal to $\frac{1}{10}$ gr. of mercurial salt, and the injection was continued daily for twenty-nine days.

Remarks.—When I first saw this girl in the consulting room I was disposed to regard the case as one of hysteria, for the alleged paralytic, when set to unlace her stays, appeared to have little or no difficulty in employing the paralysed arm. But her manner was not that of an hysterical person. There was no attempt at posing as an object of sympathy, nor did she appear to care about describing her

symptoms. Indeed, she did little but rub her arm in a vague, confused way, and volunteered no information. She was as one who has been aroused from heavy slumber, and is only half awake. Thanks to the ophthalmoscope the matter was left in no doubt. The patient was evidently suffering from some coarse disease, probably tumour of the brain, for she had well-marked optic neuritis in each eye. Further examination showed that there was distinct, though slight, hemiplegia of the right side, accompanied by a certain amount of aphasia. When it was found that there was obliteration of the circulation through the radial artery, I was at first inclined to refer this, as well as the cutaneous anæsthesia (which commenced just about the point where the arterial pulsations ceased), to a traumatic lesion, simultaneously affecting the brachial artery and certain cutaneous nerve-trunks. The girl had fallen to the ground in a fit, and it appeared possible that in the fall she had received some injury about the middle of her arm; but very careful inquiry did not confirm this. It is true that she fell on her right side, and lay with her forearm flexed upon the arm, but the arm was not under her body, nor was it stretched in any especially constrained position; she had nothing in her hand or on her arm at the time, and she received no bruise. Moreover, I cannot see what surface injury it could be which would be able to interrupt simultaneously the conductivity through so many nerves (ulnar, internal cutaneous, musculo-cutaneous, external cutaneous of musculo-spiral); whilst, if the site of lesion were deep, the median and radial nerves would hardly have escaped an injury which affected a nerve-trunk on each side of them. On the other hand, the peculiar feature of the anæsthesia must be noted, viz., that in the hand it was only the portion of skin supplied by the ulnar nerve which was affected, the district innervated by the median and radial nerves escaping. Unfortunately I did not myself test the sensibility in detail, but I have no reason to doubt the accuracy of the observation which was made. Under the circumstances it must be left in doubt whether the anæsthesia was peripheral (from strong flexure of the arm), or of central origin, and dependent on the same cause which produced the hemiplegia; or, as is always possible, whether it was a phase of the hysterical tendency, which was strongly marked in the patient.

The most interesting feature of this case was the tem-

porary obliteration of the brachial artery. This phenomenon was under observation about nine weeks. Complete at first, a very slight pulsation, though not enough to give a sphygmographic tracing, began to be perceptible in the radial artery about one month after her admission. A week later the first tracing was taken, and after about another fortnight the second, and a fortnight or so later the third. It must be understood that whereas on admission the right radial artery was absolutely indistinguishable, nine weeks later the right pulse could be easily felt and counted, though it showed a marked inferiority to that of the left side. The idea which early occurred to me respecting this condition was that it might be dependent upon embolism; but auscultation of the heart showed no signs of valvular disease, nor had the patient a rheumatic history. Moreover, embolism of the brachial would not explain the coincident hemiplegia. It may be urged, no doubt, that, possibly, whilst one plug of detached fibrine was carried into the circulation of the right upper extremity, another was borne into the middle cerebral artery of the left side. But there are two strong objections to this view. In the first place, embolism of a cerebral artery does not, according to my experience, ever give rise to optic neuritis, which was a well-marked feature of this case. I do not think that there is such a case on record. Secondly, the hemiplegia which resulted from embolism of a cerebral artery would not be at all likely to be cleared off in a few days, as this was. I see but one mode of explaining the pathological condition. There was, probably, pachymeningitis of the left side of the cranium, of syphilitic origin, giving rise to the headache, the convulsive seizure, the hemiplegia, and the optic neuritis. There was also thrombosis in the right brachial artery, and its continuation: the thrombosis occurring as a result of that kind of thickening of the vessel which is so frequently observed in the cerebral arteries in the sequel of syphilis. As a result of this the artery was blocked. Under the specific treatment employed the lesion of the dura mater was speedily repaired. The arterial lesion was longer in being influenced, but in time it also gave way (whether by softening and partial absorption of the thrombus, or its organization and shrinking, it is not possible to say) and a gradually increasing circulation took place through the obstructed vessel. It must, of course, be allowed that this explanation assumes

that other arteries, besides the cerebral, are liable to that chronic endarteritis which has been shown by Bristowe, Allbutt, Heubner, and others to be referable to syphilis. Dr. Greenfield has found a like condition in the kidney and spleen. Some thickening and roughness have been observed too, in certain cases, at the beginning of the aorta,* but beyond these I do not know of any case in which the peculiar thickening which affects especially the inner coat has been observed in other than cerebral arteries.† But it is, one would suppose, extremely improbable that the changes in question will be found to have so narrow a limit. There can be little doubt indeed, I think, that many of the cases of softening of the spinal cord (so frequent in the sequel of syphilis) will be found to owe their origin to a change of this kind in the arteries giving rise to thrombotic necrosis of the nerve-substance.

The mental obfuscation, noted in this patient, was of a kind which I have frequently remarked in cases which other symptoms showed were probably examples of syphilitic pachymeningitis.

XLVI.—*A Case of Abortive Herpes.* By ALFRED SANGSTER, M.B. *Communicated by* HOWARD MARSH. *Read May* 24, 1878.

THE patient, A. A., æt. 13, a delicate-looking, highly nervous little girl, was sent to me by Dr. Barlow, about five months ago. She came with a sharply-margined, oval patch of heaped-up, sero-purulent incrustation on the back

* Dr. Greenfield has recorded examples of this ('Pathol. Trans.,' vol. xxviii. p. 249); and in the same volume there is a case of my own in which a like condition was found ('Pathol. Trans.,' vol. xxviii. p. 295).

† Since this paper was read, my attention has been called to a case reported in the 'Medical Times and Gazette,' February 10, 1877. A male, æt. 37, after headache and giddiness, became affected with right hemiplegia and aphasia. The heart appeared quite healthy, but there was a total absence of pulsation in the arteries of both arms, whilst the pulsation of the carotids was very feeble. There was never any lividity, anæmia, anasarca, or apparent modification of temperature in the arms. Dr. Bristowe, under whose care the patient was admitted into St. Thomas's Hospital, diagnosed the case as one of cerebral softening from syphilitic disease of cerebral vessels, and attributed the obliteration of pulsation in the upper extremities to syphilitic endarteritis with consequent obstruction.

of the left forearm, just above the wrist: the long diameter of the oval patch measured about 1½ inches. She also showed two smaller patches of livid and desquamating skin on the back of the left hand: these, she said, had before presented a similar appearance to the patch described above. At her next visit, a few days afterwards, there was on the outside of the same forearm, but nearer the elbow, a hot and tender patch of erythematous skin; the patch was about the size of half-a-crown, not raised. Over almost its entire area the epidermis presented a dry and brown appearance, precisely as if weak nitric acid had been painted over it, and indeed some such cause was suggested at first. There were no signs of vesiculation or pustulation. The subsequent changes in the above patch, and in those which came out afterwards, were, briefly, as follows:—In a day or two the pain and heat subsided, the erythema disappeared from the margins, and there was left at the part a thin cake of destroyed epidermis; soon this contracted and cracked, serum and sero-pus exuded through the cracks, and, drying on the surface, produced the heaped-up crust before alluded to. Finally, in about ten days, the crust fell off, leaving the part livid and desquamating, but with no loss of substance. Patches, similar to the one described, continued to come out at short intervals upon the left forearm and arm, but apparently not following the distribution of any special nerve. On March 4, patches began to appear on the outside of the left leg; afterwards others came out on the thigh of the same side.

The patient was admitted into Charing Cross Hospital on April 6. Several patches made their appearance while she was under closer observation. One patch appeared under the left clavicle, and another over the left deltoid. Subsequently others came out over the sternum and left acromial regions. During her stay in the Hospital her spine was made out to be tender, especially in the dorsal region (the patient had always complained of pain in the back). The temperature in the axilla of the affected side was at times a degree higher than that in the other axilla. After she left the Hospital, patches continued to come out, and are now coming out on the right arm and leg.

The affinities of the disease appear to be with herpes. In support of this may be mentioned: (1) The pain and burning sensation in the patches, during the erythematous stage; (2) The association of the patches of disease, in some

instances, with special nerve distribution: e.g. superficial cervical plexus; (3) The definite course pursued by the disease.

XLVII.—*The Sequel and Fatal Termination of a Case of Lymphatic Enlargement of the Right Leg and Thigh which was communicated to the Society in* 1869 (*'Transactions,'* Vol. II.). By W. H. Day, M.D. *Read May* 24, 1878.

IN order that this remarkable case may be understood by members of the Society who are unacquainted with the history and report as described in the Society's Transactions (Vol. II., p. 104), I deem it advisable to briefly recapitulate the leading symptoms as recorded there for the information of members who were not present at the reading of the paper.

Nine years ago I recorded the case of T. C. D., at that time 7 years of age. The right leg was noticed to be larger than the left when he was 2½ years old, causing no inconvenience, and not affecting the general health. When four years old the swelling extended into the thigh, which, like the leg, was firm and inelastic; yellowish white spots appeared over the head of the tibia, looking like small encysted growths, containing cheesy matter, and subsequently drying up and disappearing. After exercise, fatigue, or an attack of indigestion, the leg became hard, brawny, and covered with patches of erythema. When the inflammatory blush disappeared, the limb presented yellowish patches like pityriasis versicolor. In 1866 he could not flex the limb, and the symptoms were thought attributable to obstruction of nearly the whole length of the femoral vein. The prepuce became much hypertrophied, and, in 1867, necessitated removal from the constant dribbling of urine. In 1868 a pearly, vesicle-like herpes formed on the edge of the prepuce, which ruptured and discharged a chylous fluid like lymph. After this the limb lessened in size. In January 1869 as much as half a pint of creamy fluid escaped from this small orifice, and the following day there was an attack of shivering; smaller and transparent vesicles began to form on the glans penis,

discharging lymph from time to time, and he was very ill. The toes were swelled and of waxy whiteness, whilst the diseased limb, in circumference, was three inches larger than the left. For the next three years he was tolerably well, but suffered at uncertain intervals from attacks of weakness, and pain and swelling in the limb.

September 15, 1872.—After two days of fatigue and running about he woke up with pain and stiffness in the leg, the foot and toes being more particularly attacked. When lying down he could not raise the limb, and this loss of power accompanied each attack. There were thirst, headache, and pungent heat of skin; temperature 102°, pulse 130 full, with considerable tension. A grain of calomel and a saline aperient draught emptied the bowels and relieved the pain and excitement. On the 17th, he was easier, and all the discomfort was in the foot. On the 18th (next day) pain came on in the knee-joint, which was exquisitely tender and sensitive; he cried out from the suffering, and could get no ease at night. A dose of chloral failed to procure him any sleep. He remained in considerable pain till the 20th, when I was summoned to him in the country. The knee was partially flexed on the thigh—it was hot, swollen, and pale; there was effusion beneath the integuments on either side of the patella, but apparently not in the joint itself. A warm lead lotion was kept constantly applied under oiled silk, and the swelling diminished. The urine was densely loaded with pink lithates, and on standing in a two-ounce bottle only one drachm was clear and free from sediment. Citrate of potash in water was given as a drink. When the leg was at rest he remained free from suffering, and was able to travel from Cambridgeshire to London on the 23rd, but the slightest movement of the joint, or the least pressure, gave pain.

The ten days' confinement to bed had greatly reduced his strength, and his loss of flesh was very noticeable; he was pallid and exsanguine, and his voice too at this time became husky and weak.

24.—There was no pain in the knee except on pressure and the movement of the limb; the swelling was especially marked over the tubercle of the tibia, and occupied the site of two old dried lymphatics; there was distinct fluctuation, but no redness or throbbing. The reduction in the size of the thigh had never been so marked, and the skin, instead of being stretched and hard, was lax and supple.

The following were the measurements of the respective limbs :—

Diseased or right limb.		Sound limb.	
Above knee .	14 inches.	Above knee .	10 inches.
Middle of thigh	15 „	Middle of thigh	12½ „
Upper third do.	15½ „	Upper third do.	13 „
Below knee .	12 „	Below knee .	12 „
Calf. . . .	13 „	Calf	8 „
Above ankle .	9 „	Above ankle .	7 „

27.—The swelling of the knee was subsiding—great tenderness over the tibia previously alluded to.

October 2.—For some months he had been greatly troubled with nettle-rash, the back and shoulders were mostly affected, but the diseased limb was not more involved than the rest of the body. He experienced a good deal of pain in getting down stairs. The chief symptoms at this time were debility, pallor of face, loss of appetite, and inability to straighten or bear any weight on the affected limb.

8.—For the last four days he had complained of great pain in the *left* inguinal region, and there was an enlarged inguinal gland the size of a small nut; to this spot he referred his suffering, and any movement of the limb increased it; he was exhausted and feverish towards the evening, and in the night perspired a good deal. His appetite was very capricious, and he was fretful and irritable on slight provocation. The affected limb had a very numbed sensation, which probably arose from exhaustion and weakness of the muscular system. Any attempt to move the limb threw the muscles into spasmodic action, and he would shiver like a person in the cold stage of ague.

22.—There had been increasing pain in the right knee-joint for a week. He often awoke in the night from the pain, and no ease could be obtained till he had taken a full sedative. I had my doubts whether mischief was not proceeding in the joint, but Sir James Paget, who saw him, considered the pain neuralgic, and advised a continuance of quinine, brandy, and nourishment.

November 5.—There had been no ease since last report, and the suffering was pitiable to witness, coming on in paroxysms at night, sometimes lasting for hours, and pre-

venting sleep. Sir J. Paget saw him again, and advised bromide of potassium, a liniment of aconite, chloroform, and opium, which seemed for a time to relieve him. About the close of the month the pain in the knee-joint departed.

December 6.—For a week he had complained of pain in the right hip, below and to the right of the anterior superior spinous process of the ilium. Yesterday and again to-day there had been great pain coming on in the three outer toes of the right side, and a general aching of the limb. When pain was present the three toes trembled like the rest of the limb, and were pale, smooth, and shining. There was no oscillation of temperature, which was normal, morning and evening scarcely varying; the night perspiration had subsided, but the pulse was weak and unsteady, and his appetite failed, perhaps by reason of the sedative, which he was compelled to take at night.

18.—He came down to dine to-day, but not without pain. For the last week he had suffered from extreme nausea, and at times severe vomiting and retching. The pain had come on in a moment when most occupied with his amusements. Of late he has looked very sallow, and complained of pain over the back of his neck, and his eyes have become weak and inflamed. I now prescribed steel wine and arsenic after meals.

25.—He came downstairs to dine, and was tolerably well, though he looked dreadfully pale and exhausted; two days later there was agony in the leg for hours, and he was very sick throughout the day without apparent cause.

1873, January 8.—Having been free from pain for a week he went out for a drive. As medicines failed to afford relief they were given up.

March 1.—He passed a round worm, having for weeks suffered from nausea and vomiting.

19.—Was kept awake with agony in the knee, and starting of the limb; he had no rest till he had taken a third dose of chlorodyne.

October 18.—For the last month he had been free from pain, sleeping well, and enjoying his food, but easily tired after any kind of exertion. At Felixstowe, where he stayed for six weeks, he did not get on so well, the place being cold, and the comforts much less than at home. No discharge of lymph since March– a period of six months.

Used crutches for 1½ years, and during this time was comparatively free from pain.

1875.—Sufficiently well to attend with tolerable regularity at school; he had comparative freedom from pain, which was now only in the foot, and there was an occasional discharge from the foot also.

1876.—In July (weather very hot), after much fatigue, he was seized with a severe feverish attack, lasting four days, during which the leg was very hot and red; he was much weakened, and after going from home took cold, from which he suffered for two months, accompanied with cough. During this time the discharge occurred frequently, and he was prostrate and much reduced.

In October, when at the sea-side, and after running about, he had a sharp febrile attack; on the 28th when he attempted to get out of bed he fell; the big leg, which had been stiff throughout the night, proving useless to him and painful. A week's rest in bed restored him, though, on first getting up, he was obliged to use his crutches again for a few days.

On December 13 he took cold and had a return of cough, with slight bronchitis, and kept his bed and room for a month, getting out again on January 12, 1877.

All the autumn term his tutor had come to him at home; but at his especial wish after Christmas he resumed his school life, and for the next month enjoyed unusually good health, practising the organ daily, and working six hours. He suffered but little pain and had only a slight occasional discharge from the foot.

On January 29, 1877, whilst sitting at dinner, his mother noticed that the lower half of his face turned livid, and the servants noticed it also, but he did not complain. On the following day he returned from school with a headache, which had come on an hour previously. He went to bed directly, and remained there part of next day. He was unusually well the three following days till taken ill in church.

February 4.—Went to church well at 11 a.m., and whilst in an erect posture suddenly fell down in a state of syncope at 12. On rallying he was led out into the open air, when he complained of great pain over the hypogastrium, and he was deadly pale. He, however, was able to walk home with assistance, and just as he entered his bed-room he began to shiver, and was placed on the bed in a state of collapse, with imperceptible pulse, livid hands and features—the tremor

was as great as is seen in the cold stage of ague. He referred all his pain to the hypogastrium. Brandy was given at once, and T. opii. ♏xv. thrown up the rectum.

12.45.—The pain had now shifted into the leg and knee, and as it was very severe the sedative injection was repeated.

1.0 p.m., free vomiting took place.

1.30, vomited a quantity of bilious fluid.

2.30, reaction fully established; temp. 103°; pulse 136, full and bounding; skin hot and pungent; intense thirst; urine passed freely, copious, and clear.

4.15, restless, and in great pain. He took a draught of hydrate of chloral and bromide of potassium, of each fifteen grains.

5.0, in great agony and begs for relief. About ʒij. of bichloride of mythelene were inhaled, extending over half an hour.

7.0, free from pain at intervals for a few minutes together; skin moist; temp. 102·2°; pulse 132; R. 56, short and catching.

11.30, temp. 104·4°; pulse 144; R. 48; urine passed; conjunctivæ injected; much wandering. A soap-and-water enema brought away some scybalæ from the bowel and a little fæcal fluid.

5.—1.15 a.m., temp. 104·4°; pulse 140; R. 44, very shallow; sleeping.

2.15, temp. 104·8°; pulse 140; R. 48; sleeping restlessly; drank iced water, but did not understand anything addressed to him.

3.15, aspect wild, staring, and excited; has tetanic spasms in the arms, and both hands spasmodically clenched; *iced water cap applied* to the head.

4.0, he looks brighter, swallows well, and the hands are relaxed; temp. 105°; pulse 144; R. 40.

5.0, temp. 105°; pulse 140; R. 44.

6.0, temp. 104·4°.

7.0, temp. 103·8°; pulse 142; R. 44.

8.30, bowels acted.

9.30, bowels acted.

10.0, temp. 103°.

10.30, very copious action of bowels.

11.45, temp. 102·6°; pulse 140, very weak and small; face cool, and lips rather dusky; breathing quiet and regular, but still quick; intellect quite clear. Drank a small quantity of beef-tea and iced champagne.

1.30 p.m., temp. 102·4°; pulse 140, weak; face alternately flushes and turns pale; is very restless and unconscious, and the iced cap is kept on with difficulty.

2.30, temp. 102·4°; pulse 140, very weak; R. 44; the bowels acted unconsciously, after which he asked for some cold water; face ashy.

3.30, bowels again acted; sick after a little champagne and beef-tea.

4.10, sickness, and pain in stomach; slight motion; cannot rest quiet for a moment together. T. opii ♏xv. per rectum.

6.0, temp. 104·0°; pulse 160, fluttering; R. 48; rested after the enema, and the bowels have not since acted. Three grains of quinine, T. opii ♏v. and beef-tea ℥ij. ordered to be thrown into the rectum every two hours.

7.0, temp. 104·0°; pulse 160; R. 56; unconscious.

9.0, temp. 103·8°; pulse 160, so small that it could scarcely be recognised; R. 56; unconsciousness continues; extremities feel rather cold, and cheeks also; enemata returned.

12.0, temp. 103·6°.

6.—2.30 a.m., temp. 103·6; R. 36, irregular.

3.0, pulseless; heart's action feeble and tumultuous, but the sounds could be distinctly recognised; constantly tossing about, so that it was not easy to ascertain whether there was a cardiac bruit; the aspect and general symptoms seem to indicate the formation of clot in both cavities.

4.30, temp. 103·4°; R. 44, very irregular and shallow—expiration much prolonged; still pulseless, and unable to swallow.

6.30, too restless to have the temperature taken.

9.0, pulsation can be felt faintly in both brachials, but not below; lividity increases, but no stertor; pupils small.

11.0, temp. 102·4°.

12.30, about half a pint of high-coloured urine drawn off, sp. gr. 1014, acid, faint cloud on heating, and not quite clear by nitric acid. He grew gradually worse, tossing to and fro, throwing up his hands, and rolling his head from side to side; his hands became very cold and livid, and at 3 p.m. his breathing was more laboured and less rapid; the expiration at one time was very long, but about 3.30 it changed its character, whilst the inspiration became long and laboured, both acts being free from stertor. About this time his face grew paler and colder, and he expired at 3.45 p.m.

The post-mortem was conducted with great care by Dr. Wickham Legg and Dr. J. Ormerod nineteen hours after death.

The following measurements were taken: from the left anterior superior iliac spine to top of left patella 17½ inches; from right anterior superior spine to top of right patella 16¾ inches. From left anterior superior iliac spine to left inner malleolus 33¾ inches; from right anterior superior iliac spine to right inner malleolus 35 inches.

Left limb, half way between knee and ankle	10¼	inches.
Right limb „ „ „	15¾	„
Largest circumference of left knee . .	12¼	„
„ „ „ right knee . .	17¾	„
Girth of left thigh at a point half-way between anterior superior iliac spine and patella	15¼	„
Do. Right do	20¼	„

Nothing noteworthy was found about the heart. The lungs were œdematous, but no other morbid change was present. All the viscera of the belly were natural.

There was no obstruction or old thrombus found in the vena cava or iliac veins. The lumbar plexus on both sides was natural to the naked eye. There was no increase in size of the inguinal glands. The large size of the right leg seemed due to an increase in the subcutaneous tissues solely, not to the muscles. No other appearance of disease could be perceived.

Dr. Gowers examined the spinal cord with the microscope and found it quite natural.

Remarks.—The results of the post-mortem examination explain little or nothing, on account of our possessing insufficient data of the physiology, and still feebler knowledge of the pathology of the lymphatic system. There was no evidence from this examination of any obstruction to the femoral vein, and apparently no enlargement of the arterial or venous trunks, though it seemed highly probable that some great disturbance took place from time to time owing to the heat of the limb, pain and swelling, and especially those rapid local changes in the limb which ensued shortly after the fatal seizure. It may be said that the last attack was but the severe form of many previous but less formidable attacks. At no time was the urine chylous.

This case, in the character of the discharge, and large

size of the limb, resembles those described by Mr. Sidney Jones ('Path. Trans.' vol. xxvi., 1875), Mr. Berkeley Hill, and Dr. Cholmeley ('Clin. Trans.' 1869), but it differs from these, and all I have been able to meet with, in the increased length and growth of the bones of the affected limb. In the report furnished by Mr. Callender and Dr. Burdon-Sanderson, they say that 'a perfectly similar case is recorded by Dujardin in 1854.' Even in Mr. Thomas Smith's case of nævoid elephantiasis ('St. Barth. Hospl. Rep.' vol. v.), where the enlarged limb was three inches longer than the sound leg, 'the lengthening was due to the excessive hypertrophy of the integuments over the sole and heel.'

This case would be placed by the systematic surgeon under the category of 'lymphatic elephantiasis,' Mr. T. Smith ('Nævoid Elephantiasis,' 'St. Barthol. Hosptl. Rep.' vol. v., 1869) having already distinguished three varieties of elephantiasis arabum—lymphatic, vascular, and climatic—the last being the swollen leg seen in tropical climates. Indeed, referring to my first report of this case, he has himself already reckoned it as an instance of the lymphatic variety of elephantiasis.*

XLVIII.—*Sequel of a Case of Cancer supervening on Ichthyosis of the Tongue of twelve years' standing, which is reported in Vol. X. of the Society's Transactions.* By George Brown. *Read May* 23, 1878.

THOSE of you who examined the patient whom I brought before the Society on March 23 of last year, and whose tongue I had removed for cancer four months previously, will be prepared to hear that the case has terminated fatally. At that time, it will be remembered, cancerous infiltration of the cervical glands had commenced, and it was really only a question of time as to when the end would take place. Since the operation he had, with a view to retard the progress of the disease, taken 20 grains of iodide of potassium and 20 minims of arsenical solution daily, and, apparently, with good result, as the glands remained about in the same condition for several months. He ceased taking the arsenic and iodide at the end of May, by which time it was evident that the disease had attacked the stump. By June 7 a

* For illustrative cases see Dr. Busey's essay on 'Congenital Occlusion and Dilatation of Lymph Channels,' 'American Journal of Obstetrics,' July–October 1877, and January 1878.

small ulcer had appeared on the stump, which spread rapidly, soon becoming a deep, sloughing, and fœtid sore. For some six or seven weeks I applied various forms of caustic, such as nitric, acetic, and carbolic acids, to the ulcer, at intervals of four or five days, hoping to induce a more healthy action, but without much good result, as the ulceration daily became deeper and more extensive. The most satisfactory of these applications was strong carbolic acid. Hæmorrhage now began to be troublesome, and we were in daily fear that the ulceration would open into an important vessel, and that fatal hæmorrhage might take place before surgical assistance could be obtained. About this time I saw in an American medical journal (I am unable to give the exact reference) a note respecting the use of the saturated alcoholic solution of pure tannin in cases of sloughing ulcers, and I determined to try its effect in the present case. I made a solution of tannin acid, containing six drachms to the ounce of alcohol, and ordered it to be applied to the ulcerated surface at least once a day, first cleaning the surface as much as possible. The result of this treatment was most gratifying. The application acted as a mild caustic and strong styptic, and it is a noteworthy fact that, although the patient lived nearly seven months after we began its use, the ulcerated surface scarcely increased in size during the whole of the time, and not the slightest hæmorrhage took place up to the day of his death. As far as I can learn the saturated alcoholic solution of tannic acid had not previously been used in this country. From the marked benefit which attended its use in the present instance I would strongly commend it to the notice of surgeons for use in similar cases. Although I have not had an opportunity of testing it I should expect it to be very useful in cancer of the womb, in cancrum oris, and all ulcerations of a sluggish and unhealthy character. To return to the case. The cancerous glands of the neck, which had been quiescent for some months, now (August 1877) began to increase in size, and gave rise to much pain and some difficulty in swallowing. The pain was relieved by full doses of morphia and chloral; but after a time he found the chloral cause such a burning sensation at the seat of ulceration that we were obliged to stop its use. He continued to transact his business, and came to town occasionally up to the end of September, after which he seldom went out of the house, although he continued to get up daily until within a fortnight of his death,

which took place on January 31, 1878, from exhaustion. For some time he had been losing flesh and getting gradually weaker. During the last two months of his life he refused all forms of nourishment except milk and brandy. During this time he also took a quantity of morphia, indeed he said that he could not live without it. He used to take four or five half-ounce doses of solution of morphia (equal to two grains of the alkaloid) every day. This had the effect of causing absolute freedom from pain, without inducing stupor. He slept well during the night, and occasionally in the day, but in the intervals he was perfectly able to transact his business, read the newspapers, &c. At the end of about five hours from the time of taking his morphia draught, he began to feel a burning sensation in his mouth, which speedily, unless he repeated the dose, became quite agonising. Four days before his death the cervical glands were swollen to such an enormous size that I feared he would be suffocated through their pressure on the trachea. At his request I put him under chloroform, and opened two of the largest glands on the right side of the neck, evacuating several ounces of clear glairy fluid. This operation had the effect of greatly relieving the dyspnœa.

From a surgical point of view this case may, I think, be considered a successful one. A radical cure was never hoped for, and the tongue was removed simply with a view to prolong life and relieve present suffering. At the time the last operation was performed the patient's articulation was very indistinct; he had very great difficulty in swallowing, and the disease appeared to be running such a rapid course that, had nothing been done, the end could only have been a question of a very few weeks. As it was he lived upwards of fourteen months after the removal of the tongue. Moreover, the mode of death, which would doubtless have taken the form of starvation, would have been a much more painful one than it subsequently proved to be.

XLIX.—*A Case of Gastrotomy for Acute Intestinal Obstruction.* By W. Harrison Cripps. *Read May* 24, 1878.

THE patient, a pale, anæmic-looking youth, aged 18, was admitted into the Great Northern Hospital on Friday, January 25, with the following history:— Five months ago he fell down, and a man trod upon his abdomen,

causing him much pain at the time. He was able to walk home, and in a few days felt all right. Shortly after this accident his bowels became very constipated, being only open about once a week after large doses of medicine, and, at times, he had sharp attacks of abdominal pain.

The bowels acted freely on January 16. On the 17th, while at work dusting a counter, he was seized with pain in the abdomen, principally in the right inguinal region, but at times radiating over the whole abdominal region. The pain was so severe that he could hardly stand. He went home and to bed. During the next four days the pain was more or less constant. He vomited frequently, bringing up food and Epsom salts, of which latter he largely partook.

On the 22nd (the fifth day of seizure) the vomit became fæcal. Three days later he was admitted into the Hospital. The patient had a shrunken, anxious countenance, with a feeble pulse, and was vomiting a coffee-coloured fæcal material almost constantly. The belly was distended, hard and irregular to the feel, dull on percussion, and with only slight tenderness on pressure. No tumour could be felt. The patient being placed in a kneeling position, with the pelvis well raised and supported by pillows, three pints of water were injected into the colon, the anus round the canula being plugged. No more water could be injected without using undue violence. On withdrawing the canula the water which was hardly discoloured was ejected from the bowel in a strong jet.

The symptoms continuing, a hot bath was ordered, and 30 min. of liquor opii sedativi were given by the mouth. The patient was greatly relieved by the bath and opium, vomiting quite ceased, and he slept for many hours. The freedom from vomiting lasted about 24 hours, but on the following night (the 26th) it returned more violently than ever. With the concurrence of my colleague, Mr. Cumberbatch, I decided to operate at once. The bladder was first emptied. Under carbolic spray an incision three inches long was made in the median raphé, commencing an inch below the umbilicus, and exposing the peritoneum; an opening just sufficient to admit the finger was made through this membrane, and such portions of the viscera as lay within reach were gently explored with the finger, without result. The incision into the peritoneum was extended to the length of the wound; the great omentum was then seen lying across the incision; this was easily drawn up with the finger. A portion of intestine, some inches in length, then protruded into the wound; this was drawn out bit by bit from the upper part of the

incision, and passed back again into the belly through the lower part in such a way that at no one time were more than five or six inches of intestine exposed. After thus exposing some two or three feet of intestine I was under the impression, owing to the intestine apparently being drawn more and more from the left side, that I was approaching the duodenal end, and believing from the symptoms that the stricture must be low down in the small intestine, the process of exposing the bowel was reversed.

After drawing out and returning, as just described, some five or six feet of gut, a resistance was felt, and no more gut could be brought out. Using the intestine as a guide, on passing the finger down towards the upper part of the right iliac fossa the cause of resistance was apparent. The gut appeared to terminate abruptly in a small nodular swelling, which was firmly fixed to the back of the abdominal cavity. Upon further examination, and obtaining a view by drawing the intestine to one side, this turned out to be a portion of the ileum, tightly girt by a constricting band. By means of the finger-nail, and a knife sparingly used, the constricted portion was drawn out.

The bowel, when released, presented the following appearances:—Down to the constricted portion the ileum was distended. Beyond the constriction the intestine, completely empty, was firmly contracted, and both looked and felt like a solid cord of pale colour. The part that had been strangulated appeared like an elliptical patch, two inches long and one broad. The surface was dark red in colour, rough, and coated with recent lymph. The coils of intestine drawn out during the operation showed no symptom whatever of vermicular action. The edges of the wound were brought together by eight carbolized gut sutures. On recovering from the chloroform the patient vomited twice, the matter being fæcal; he then said he felt much more comfortable and experienced no pain. Six hours after the operation the bowels were freely opened, and a large quantity of wind passed.

I am indebted to Mr. Gillam, our resident medical officer, for the subsequent notes of the case:—

At 11 a.m. on the day after the operation, the following note was made: expression more natural, less anxious. He lies on his right side, with the legs drawn up. No feeling of sickness, no pain. Temperature normal; pulse small, 80. A few hours later on the same day diarrhœa set in, the bowels being opened three or four times during the evening.

January 28.—This diarrhœa ceased on the following day, but at times he complained of some abdominal pain.

29.—During the night he was seized with severe abdominal pain, being with difficulty kept in bed, and passing a restless night. No sickness; bowels acted during the night. This morning face is flushed, expression anxious and one of pain; tongue rather dry, inclined to be brown on dorsum; pulse 112, regular, better volume than yesterday; respiration 18, normal; temperature 98°; has been sleeping at short intervals this morning. 10 p.m.—Pulse small and quick; complains of 'coming over cold'; some discharge is come through dressing; very restless; table-spoonful of brandy given, with the effect of strengthening pulse; he now says he is much warmer.

30.—Very restless during the night; is extremely weak; face much drawn, eyes shrunken; pulse 100; temperature 97°.

During the day he appeared better; the wound was dressed under spray, slight discharge on the dressing; belly not at all distended, soft, without much tenderness.

31.—Has passed a bad night, and is almost insensible; pulse not perceptible at wrist; extremities very cold. This morning, however, he has rallied considerably, has been asking for drink, and says he feels very much better. Diarrhœa recommenced, frequent pale yellow watery stools being passed. 11 p.m.—Has had a much quieter evening; has had two or three hours' sleep, and appears to be much better. During the day he has taken small quantities of strong beef-tea and brandy at frequent intervals.

Feb. 1, 11 a.m.—Restless towards the end of the morning, but otherwise he slept well during the night. Diarrhœa has just recommenced. Hands and arms blue, and quite cold (wrapped in cotton wool); appears to be weaker than yesterday.

2.—Seems weaker, and does not take notice of things around him; diarrhœa still continues. Pulse 100; respiration 34; temperature 97°.

3.—Dozed a little during the night, did not sleep; can take but little nourishment; tongue dry and brown; sordes on teeth and gums; breathing laboured, 30. 4 p.m.—Pulse scarcely perceptible at the wrist; bowels open yesterday: motions light-coloured, of a grumous character.

4.—Condition much the same as yesterday: diarrhœa

still continuing. Early on the following morning patient died, having lived eight days after the operation.

Post Mortem.

The post-mortem showed the body extremely emaciated, with a small bedsore; the greater portion of the wound in the abdominal wall appeared to be united, the lower part showed a slight sloughing just at the margins of the incision. On reaching the abdominal cavity, one or two intestinal coils appeared to be slightly adherent to the deep surface of the wound. For about three-quarters of an inch on each side of the wound the parietal layer of the peritoneum was rough, and had a slight film of lymph on the surface, and it was to this surface that the intestine was adherent. The peritoneal cavity contained only the mere traces of fluid common to that membrane; with the exception mentioned, there was not the slightest sign of recent peritonitis in any portion of the cavity, both the parietal and visceral layers of peritoneum retaining their polished smooth surface.

The portion of the bowel which had suffered strangulation was easily recognised by its somewhat darker colour and its having lost its peritoneal lustre. On searching for the cause of the strangulation it was easily found. A firm, fibrous band, about half an inch broad, stretched across from the ileum, a few inches from its termination in the cæcum, to the parietal layer of the peritoneum covering the psoas muscle; it was under the arch thus formed that a knuckle of the ileum, two feet from the cæcum, had slipped, and become strangulated.

I will not detain the Society with any lengthened remarks upon this case, but should like to call attention to one or two prominent points of interest.

Many operators have found a difficulty in returning the bowel into the abdominal cavity; bearing this in mind, I took the precaution of having only a few inches of intestine exposed at a time, passing it in at one end of the incision as it was withdrawn at the other; by this proceeding not the slightest difficulty was experienced in returning the intestine.

Before operating it is desirable to know in what portion of the canal the obstruction is likely to occur, so as to expose and draw out as little bowel as possible. Careful attention to the symptoms will throw considerable light on this matter; but I will not waste time in reiterating the well-

known train of symptoms which lead to the diagnosis of the stricture being high up or low down in the intestinal canal.

From the chain of symptoms referred to in the case narrated, it was pretty obvious that the obstruction would probably be found low down in the small intestine; the great distention of the abdomen and the large quantities of fæcal vomit were inconsistent with the obstruction being near the duodenum.

On first opening the belly, and a coil of intestine presenting itself in the wound, it would be of considerable importance to recognise which portion of the coil should be drawn out, in order to follow the intestine downwards. I know, at present, of no means of ascertaining this, except bearing in mind that the ileum lies principally to the right side.

I would especially dwell upon the danger of delay in these cases. If symptoms of acute intestinal obstruction come on suddenly in a patient perfectly healthy, inversion and inflation, &c., failing to give relief, I believe that gastrotomy should be at once performed. I cannot see the object of giving opium, as often recommended. If the symptoms are sufficiently defined to point to mechanical obstruction, the possibility of benefit to be derived from thus doing is too remote to have any weight against the harm resulting from its administration.

I believe that the 30 min. of opium I administered to the patient had much to do with the fatal issue of the case: the symptoms were, for the time, completely masked by the narcotic, and a false feeling of security was created; thus twenty-four precious hours were lost, and the operation was ultimately performed on a patient whose vital energies had slowly sunk below a possible rallying point.

The case narrated cannot fairly be called a death as the result of gastrotomy, but should be classed as a death for want of the operation being performed sufficiently early. The large doses of purgative medicine taken before the patient entered the Hospital probably had much to do with the enteritis, which was subsequently the most troublesome complication.

From the Registrar General's returns it will be found that, on an average taken for the last 25 years, 1,432 people die annually in England and Wales from intestinal obstruction; from the obscurity of the diagnosis this is probably far short of the true number. That a certain portion of these

lives could be saved by timely operation would be generally admitted.

The two prominent objections to the operation lie in a possible error of diagnosis, and in the fear of opening the peritoneal cavity. As regards the diagnosis, doubtless cases will arise in which a positive diagnosis is impossible; but the occurrence of such doubtful cases can be no argument against operating in instances in which the diagnosis is clear. Opening the peritoneal cavity is a severe measure; but the increasing experience gained in the operation of ovariotomy teaches how, with proper precaution, the risk of peritonitis may be greatly reduced. But, whatever the danger from this cause, it can only be estimated by comparison with the danger of leaving the patient with a strangulated gut unrelieved.

In order that the operation may take its fair place in surgery, the successful cases will have to be weighed carefully against the errors in diagnosis, the danger to the peritoneum, and other complications attending the operation. At present I believe it to be useless to attempt to generalise upon the results of the operation, or draw even approximate conclusions: the statistics being too meagre to furnish a sound basis for reliable data.

However, it is not improbable that the ultimate success of this operation will depend upon the gradual elimination of errors in detail and the subsequent treatment; and thus the careful record of present failures may be the ultimate means of raising the operation to a valuable position in surgery.

I.—*A Case in which Sudden Death followed the Operation of Tapping a Hydatid Cyst of the Liver.* By THOMAS BRYANT. *Read May 24, 1878.*

EDWARD S., a waggon-builder, aged 40, of good family history, was admitted into Job Ward, Guy's Hospital, on January 16, 1878, under Mr. Bryant's care. Fifteen years before he had suffered from rheumatic fever. Some eight years after he passed many feet of tapeworm: and in 1874 he had an epileptiform seizure, and was unconscious for

2½ hours. Eleven months before admission he was operated on for internal piles.

The patient stated that three years ago he first complained of a dull, gnawing pain, with a rather heavy feeling across the stomach, which he supposed was due to cold, and as the pain became more constant, and he suffered much from indigestion and flatulence after food, he sought advice, and was ordered medicine. In February 1877, his medical man told him that his liver was much enlarged, and ordered him iodide of potassium, but without effect. He then, for the first time, noticed some abdominal swelling, which steadily increased, and was accompanied with pain. Up to ten days before his admission he had been at his work as usual. He then caught a severe cold. The pain increased, and he complained of a feeling of weight and tightness. His bowels had been always very irregular. When admitted there was a large swelling on his right side, more especially marked at the upper part of his abdomen, which was firm and resisting, yet somewhat elastic, with a kind of fleshy feel. The lower part was very prominent, and the lower edge could be almost defined. There was numbness in both loins, and he was unable to remain long in any position but on his back. His bowels were very irregular, and the colour of his motions, at times, was very light, while his urine was dark-coloured, with a slight trace of albumen on boiling. He was very tender on pressure on the right side, especially below the ribs.

Extent of dulness over liver.—Reaching up to between the right fifth and sixth ribs, it passed obliquely across the abdomen down to the seventh on the left side, and 3½ inches outwards. From the middle line it passed obliquely downwards and inwards to a line ½ inch above umbilicus, across to the right side, where it was ½ inch below, and extended outwards on the right side well round to the loin. The diagnosis was made of hydatid below and behind the liver.

January 21.—Without any anæsthetic being used the tumour was explored. A trochar, not larger than a silver probe, was passed about 3½ inches to the right of the middle line and immediately beneath the edge of the right ribs into the swelling, and having gone through about an inch of liver, the cyst was pierced, and ℥ix. of a clear, watery, non-albuminous fluid were drawn off, enough to relieve tension. A pad of lint was then applied to the opening. A few seconds

after the operation the patient became intensely flushed, and complained of an agonising pain in his face and jaws. As suddenly as he became flushed he became livid and unconscious, and after vomiting two or three times had a kind of epileptiform seizure, from which he never rallied; at the same time his pulse ceased. Artificial respiration, the galvanic battery, and the nitrite of amyl were tried, but breathing and circulation became much more feeble, and he died in five minutes.

Post-Mortem by Dr. Hilton Fagge.

On opening the abdomen, the first thing noticed was that there was a quantity of blood-stained fluid in it, probably half a pint altogether. The liver was greatly enlarged and of a deep purple colour. At first one saw no sign of any hydatid, but on looking beneath the ribs towards the diaphragmatic surface, a part of the surface was seen to be pale. The puncture was seen as a small aperture in the surface, from which a little blood oozed on pressure. After removal it appeared that the whole of the back part of the right lobe was replaced by an immense hydatid cyst, as large as an adult skull (I should guess). This projected from the *under* surface of the organ, and in such a way that the structures in the portal fissure were pushed forwards and upwards by it, and flattened against one another, the connective tissue about them being also sclerosed in a marked degree. It seemed difficult to understand how it was that no ascites from portal obstruction had occurred.

I now laid open the cyst, which looked partially shrunken, and collected from it 3½ pints of blood-stained fluid. After being emptied its walls were quite collapsed. It appeared, however, that, towards the convexity of the liver, it nowhere lay altogether close to the capsule. There was a varying thickness of atrophied liver-substance surrounding it, and measuring, at the thinnest part, ⅙ inch. This was tough, but contained a surprising number of large patent veins, and round the margin of the cyst there were larger veins lying beneath the capsule, into which one could have passed a pencil.

The trochar had not passed into any superficial vein: on passing a probe along its track one could readily bring this close to the inner surface of the cyst capsule, and in this last the aperture of the trochar could be plainly seen as a fine puncture, and on laying open the track of the trochar with a knife, I found that immediately inside the

hydatid capsule the trochar had transfixed a very large vein. Subsequent dissection showed that this was the trunk of the portal vein, before it divided into its two largest branches. It may be difficult to understand how this could have been reached from the convex surface of this organ before the cyst was reached, but, as I have already said, the portal vein had been pushed forwards and upwards. My hypothesis, therefore, is that, after withdrawal of the trochar, hydatid fluid escaped into the portal vein (was sucked into it), and acted as a direct and fatal poison.

The capsule of the hydatid was tough and thick, and showed round patches of atheroma. The hydatid itself was a single cyst, which clung closely to the capsule, but could easily be pushed off. Its inner surface was a little rough, and showed a few projections. There were no secondary cysts.

The liver-tissue was a little cirrhotic. The gall-bladder contained healthy bile. Body well nourished. Brain healthy. Lungs healthy. Larynx healthy. Heart healthy: all the cavities (on both sides) contained only uncoagulated purple blood in small quantity. Inf. vena cava much obstructed; its walls adherent to very considerable extent, but some passage for blood left. A little blood, but not much in peritoneal cavity.

Remarks.—I will not speculate further as to the cause of death in this case, but simply record it as of interest, and showing that such an apparently simple operation as tapping a hydatid has dangers which ought not to be ignored. I may add that, had this patient taken chloroform the fatal result would unhesitatingly have been attributed to it.

LI.—*A Case in which Œsophagotomy was performed for the Impaction in the Œsophagus for Five Weeks of a Set of Artificial Teeth.* By W. A. McKeown, M.D. *Communicated by* Wm. Mac Cormac. *Read May* 24, 1878.

MRS. G., of Glenary, co. Antrim, consulted me on January 16 last. She stated that for a number of years she had worn a set of artificial teeth, which she very seldom removed; that three weeks previously, whilst she was asleep, the plate slipped into the throat; that she awoke with a sense of suffocation, and discovered what had happened; that since

the accident she had been under medical care; that various methods had been used to dislodge the plate, and that indeed it had been supposed that it had passed to the stomach. She stated that after the use of the probang, on one occasion, she had lost a large quantity of blood. For some days also she had not been able to swallow even liquids, and had been fed by nutritive enemata; but latterly she could swallow milk, and milk with corn-flour. She did not seem to have lost flesh, and, considering her desperate condition, was in fair spirits. She indicated the lower part of the neck as the place where the foreign body was lodged. The neck was short and fat, but by careful deep pressure I detected a hard body in the œsophagus to the right side, a little above the clavicle, and I was able to move it. I then passed a whalebone, with a smooth metallic body tied to the end of it, down the œsophagus, and demonstrated the presence of the body by the metallic click elicited. It is worthy of note that frequently, particularly after the repeated introduction of instruments, the characteristic click was not observed. This was, doubtless, owing to folds of the mucous membrane of the œsophagus intervening between the metallic knob and the plate. She suffered, at times, excruciating pain in the right side of the chest, and in the right arm along the course of the nerves. On the first visit I tried to shift the plate upwards, by external manipulation, so that I might, if possible, grasp it with forceps. I was really at first under the impression that I had succeeded in shifting it upwards, but I afterwards had reason to believe that I only rotated, or pushed the body to the left side. I caught the upper edge of the plate by forceps on many occasions, but only twice did I secure a really firm grasp. On the first occasion I was obliged to relax, because the patient suffered much pain, and said she thought I had caught the flesh as well as the foreign body. On the second occasion, viz., on January 25, my grasp was so secure that, had it been possible, I could have extracted the plate. I could move it from side to side freely enough, and did so with a view of disentangling it, but on exerting gentle traction upwards she became livid, the tongue protruded from the mouth, she could not speak, and respiration seemed suspended. I instantly withdrew the forceps, and fully expected that tracheotomy would be immediately necessary. Fortunately, however, these alarming symptoms abated, and in a short time she was in her usual condition. I definitely abandoned

any further attempt at extraction by the mouth, regarding it as far more perilous than œsophagotomy, and accordingly proposed the latter operation, to which she assented. During all the attempts at extraction by forceps she did not lose a dozen drops of blood, but on several occasions, after such attempts, there was a copious secretion of foul-smelling matter, which she brought up by the mouth, and I feared that ulceration of the œsophagus might have taken place. From the first visit, up to the date of performing œsophagotomy, the pain shifted frequently, in fact with every change of position of the plate. At one time it was in the back, at another in the left arm and breast, and at another in the left arm.

On January 28 I performed œsophagotomy. Drs. James Moore, John Moore, and David Johnston were present during the operation, and rendered me most valuable assistance. The teeth projected to the left side, and I accordingly made the incision on the left side of the neck, beginning opposite the middle of the thyroid cartilage, and extending it downwards nearly to the sternum, the whole incision lying anteriorly to the sterno-mastoid. The cervical fascia having been cut on a director, I separated the carotid artery and jugular vein, with their sheath, from the thyroid muscles, the thyroid body, the trachea, and the œsophagus, mainly by the handle of the scalpel, the fingers, the end of the director, and forceps, cutting any bands of connective tissue which offered much resistance by the knife or scissors. The œsophagus having been exposed, the recurrent laryngeal nerve was observed running along the front of it. In consequence of the depth of the wound I thought it better, instead of cutting on the plate, to project the œsophagus forwards by the end of œsophageal forceps introduced by the mouth. This I accordingly did, and then opened the œsophagus. I had thought that the whole difficulty of the operation would be over with the opening of the œsophagus, but in this I was mistaken. When I had the tube opened as largely as I deemed safe, I found that I could not, even by the aid of strong forceps, pull the plate out. The long diameter of the plate was vertical, and this circumstance, and also the peculiar shape of the plate, its depth, and numerous deep notches, no doubt contributed to the difficulty. I believe also that the hook was fastened in the œsophagus, as the plate could not be pushed upwards. The difficulty was overcome at last by rotation of the plate, so as

to bring the lower end into the wound, and happily the plate was extracted without any laceration of the œsophagus. The plate was situated entirely in the œsophagus, at the upper part.

I have little further to remark regarding the operation. The patient was kept under the influence of chloroform only during the first stages of the operation. Instead of having the trachea drawn to one side and the vessels to the other side by hooks and retractors, I remained satisfied with a broad retractor to protect and retract the vessels alone. I found, when traction was exercised on both sides of the wound, the relation of the parts was so altered as rather to impede the operation. The site of the operation lay just between the superior and inferior thyroid arteries. The

Front view, natural size.

Back view, natural size.

former artery was seen skirting the upper margin of the wound, the latter was not observed. The hæmorrhage was trifling, not exceeding a few ounces.

The plate was partly of 'composition,' and partly of gold, and had four incisor teeth, one of which had been knocked off by the forceps in the extraction. The space from which the tooth is wanting is marked by the two rivets. One clasp had been broken off, whether by the forceps or not I could not say, the other hook pointed upwards. The sharp posterior edge of the plate rested on the posterior wall of the œsophagus.

I did not find any evidence of serious damage to the œsophagus, and there was no infiltration of inflammatory material outside the tube, notwithstanding the lengthened sojourn of the foreign body, and the frequent introduction of instruments.

The patient made most satisfactory progress. She was fed by the stomach-pump tube for six days only. On the seventh day the wound in the œsophagus was healed completely, not even a drop of liquid passing out by the wound, and she could swallow well. There was a little œdema of the cellular tissue for some days after the operation, a little fever on the second and third days, and at the same time a foul-smelling discharge. To guard against diffuse inflammation of the cellular tissue the most scrupulous cleanliness was enforced. The wound was injected with a solution of Condy's fluid seven times daily, and lint with spirit lotion or carbolic lotion was applied over the wound. Besides, the patient was directed to swallow a little weak whisky and water with chlorate of potash in solution very frequently. A part of this came out by the wound, and in this way the whole wound, from the œsophagus outwards, was kept constantly clean and antiseptic.

In another week the whole wound had healed, and the patient returned home quite well. The voice was not affected at any time. The power of swallowing was good, even for solids.

Remarks.—I had imagined that if I could seize the plate I could extract it, and hence, whilst I had hope of accomplishing this, I did not propose œsophagotomy. From my experience of this case, however, and the testimony of other surgeons, I am convinced that it is useless to attempt to extract by the mouth a large angular body, such as this, and that the interests of the patient would be always better consulted by a prompt resort to œsophagotomy. I do not think that such a body could be drawn behind the larynx without immediate danger of suffocating the patient.

This is now the 29th case of œsophagotomy on record. As the operation is so rare, every case is of exceptional interest to the profession. I therefore deem it proper to submit to your Society the full particulars.

LII.—*Observations on the Period of Incubation of Scarlet Fever, and of some other diseases.* By CHARLES MURCHISON, M.D. *Read May* 14, 1878.

BY 'period of incubation' I understand the time which elapses between the poison of an infectious disease entering the system, and the first manifestation of symptoms. This is the ordinary acceptation of the term, but I consider this definition necessary, because some authorities have calculated the period of incubation of the exanthemata from the time of exposure to the poison until the appearance of the cutaneous eruption, including therefore in the incubation-period that of the primary fever.

A knowledge of the incubation-period of the several infectious diseases is of great practical importance. Advantage is taken of this knowledge in the practice of vaccination as a preventive of small-pox. The development of the areola, which is necessary for the protective effect of vaccination, occupies about eight days; but, as the latent period of small-pox is usually about twelve days, it follows that, if a person exposed to the poison of small-pox be successfully vaccinated at once, he has time to escape altogether, or to have the disease in a modified form. And, in all of the acute contagious diseases, the knowledge in question determines the time during which it is necessary to keep in quarantine persons who have been exposed to the infection, and helps also in determining the mode of introduction of the poison, or the origin of an epidemic.

It is, however, not a little remarkable how vague and unsatisfactory our knowledge still is respecting the period of incubation of most of the infectious diseases. Dogmatic statements on the matter, the most widely different, are made by the authors of our standard works on medicine, founded too often upon deficient observation. The Clinical Society has recognised the practical importance of obtaining a more definite knowledge than we yet possess of the duration of the incubation-period of the several infectious diseases, by appointing a Committee to collect and collate well-authenticated facts bearing on the subject; and I now offer to the Society the results of my observations on the incubation-period of some of these diseases, and particularly of scarlet fever.

But, in the first place, I would observe that in none of the infectious diseases does the period during which the poison incubates appear to be fixed. Even in small-pox the latent period is not 'limited with precision,' as stated by Trousseau.*

Small-pox. — In this disease the incubation-period is usually assumed to be twelve days when the poison enters the system in the ordinary way, and only seven days when the poison is introduced by inoculation. In the three following cases which have come under my notice, in two it was thirteen days, and in one eleven days.

Case I.—On January 9, 1877, Miss L., aged 3, with three good vaccination marks, sat on the knee of her aunt, Miss S., who was then suffering from headache and febrile symptoms, and was in the first day of what proved to be a typical attack of varioloid. After this Miss L. went home, and did not visit the house of her aunt again; nor was she in any other known way exposed to the poison of small-pox. On January 22 she became cross, lost her appetite, and had fever; and on the 25th a few variolous papules appeared.

Here the period of incubation was thirteen days. Possibly, had the thermometer been used it might have been a day less.

Case II.—James A., aged 22, was admitted into the London Fever Hospital on February 20, 1868, ill two days. His attack turned out to be one of varioloid. On February 5 he had visited a friend in Whitechapel suffering from the small-pox, and on February 18 he was taken ill with fever, headache, and lumbar pain, but no vomiting. On February 21 the papules of small-pox appeared.

Here also the incubation-period was thirteen days.

Case III.—On September 10, 1864, Eliza P., aged 27, was admitted into the London Fever Hospital on the fifth day of an attack of variola hæmorrhagica, and died at 10 p.m., four hours after admission. There were no characteristic papules, and the case was mistaken for one of malignant scarlatina, and placed in the Scarlet Fever ward. On September 21, eleven days afterwards, Ruth C., aged 21, who was recovering from an attack of scarlet fever in the same ward, having been admitted on September 5, on the third day of the disease, was seized with the premonitory symptoms of variola, the eruption of which appeared on September 24. She was desquamating freely when the small-pox set in.

In this case the incubation-period was eleven days.

These cases confirm the ordinarily accepted view that the incubation-period of small-pox is about twelve days. But Curschmann, in his recent article on Variola,† remarks

* 'Clin. Méd.' 1861, tome i., 5.

† Ziemssen's 'Cyclop. of Medicine,' American ed., vol. ii., 1875, p. 341.

that the latent period of small-pox is not so constant as is always maintained. In cases where he had been able to fix it exactly, it had certainly been most often between ten and thirteen days, but in others it had been as long as fourteen days, or as short as from eight to ten days, while in one it was only five days. Zuelzer also found the period of incubation in certain (nine) cases of hæmorrhagic small-pox to be only from six to eight days.* Lastly, the fact that the incubation-period of small-pox is far from being fixed was demonstrated by the late Dr. Otto Obermeier, in a memoir containing the largest collection of observations on the latent period of small-pox with which I am acquainted.† Of eighteen cases in which the actual moment of infection was determined,

in 1	the	incubation-period	was 5	days.
„ 1	„	„	6	„
„ 3	„	„	8	„
„ 1	„	„	9	„
„ 2	„	„	10	„
„ 5	„	„	11	„
„ 4	„	„	12	„
„ 1	„	„	13	„

Total: 18 cases.

Varicella.—I can find among my notes only one case showing the duration of the incubation-period of varicella: in that case it was eleven days. Most authorities make it longer than this. Thus, according to Thomas, it is from thirteen to seventeen days‡; and, according to Trousseau, from fifteen to twenty-seven days.§ The data, however, on which these statements are based are not given. On the other hand, Dr. W. Squire has collected ten cases in which the duration of the incubation-period corresponded with that of mine, being in all from ten to twelve days.‖ When varicella is produced by inoculation, the incubation-period appears to be shorter than when the disease is contracted in the ordinary way, just as in the case of small-pox and measles. Thus, of ten cases in which Professor Steiner of Prague inoculated the contents of the vesicle of varicella,

* Ziemssen's 'Cyclop. of Medicine,' American ed., vol. ii., 1875, p. 341.

† 'Beiträge zur Kenntniss der Pocken,' Virchow's 'Archiv für path. Anatomie und Physiologie und für klin. Medicin,' Bd. liv.

‡ Ziemssen's 'Cyclop. of Pract. Med.,' American Trans., vol. ii., 1875, p. 16.

§ 'Clinique Méd.' 1861, tome i., p. 133.

‖ 'The Period of Infection of Epidemic Disease': London, 1874, p. 28.

eight were successful. Varicella, and not variola, was always produced: and previous vaccination had no influence whatever on the result. In all of the eight children, the period of incubation was eight days.*

Measles.—I am inclined to think that the incubation-period of measles, although subject to variations, is quite as definite as that of small-pox. There is, it is true, some discrepancy in the statements of different authors respecting it; but much of this discrepancy, I believe, is due to a difference in the method of calculation. In different works we find the incubation-period set down as between ten and sixteen days, and as being most commonly fourteen days; but when we turn to the facts upon which these statements are founded, it appears that, in the case of measles, the incubation-period has, in the majority of instances, been calculated from the date of exposure to the poison to that of the first appearance of the eruption, and that, therefore, the stage of primary fever, which lasts three or four days, has been included in the period of incubation. Making allowance for this source of fallacy, the incubation-period of measles is usually about ten or eleven days. It is worth noting, however, that, just as in the case of small-pox, when the poison is introduced by inoculation, the incubation-period is shorter, or only seven days.†

The best observations on the incubation-period of measles with which I am acquainted are those made by Panum in the epidemic which occurred in the Faröe Isles in 1846. There were seventeen of these islands inhabited. Prior to April 1846 not a single case of measles had been observed in these islands since 1781; but within six months more than 6,000 of the 7,782 inhabitants suffered from it. Panum was able to trace the importation of the disease from one island to another, and, in this way, he had an opportunity of determining the period of incubation in a very large

* 'Brit. Med. Journ.,' May 8, 1875, p. 610.

† Successful inoculation with the blood of measles was performed by Home of Edinburgh at the suggestion of Monro, in 1758; by Speranza of Milan in 1822; and by Michael of Katona in 1842. An account of Michael's experiments will be found in the 'Gazette Médicale de Paris' for 1843. In all he made 1122 inoculations; only 7 per cent. failed; the disease was mild; not one of the inoculated died, although a severe epidemic was prevalent at the time. The primary fever appeared on the seventh day, and the eruption on the ninth or tenth day after inoculation. The inoculations were made with a mixture of blood and serum from the miliary vesicles, or with tears. More recently measles has been successfully inoculated by several German physicians, of whom Jörg and Wendt assert that the disease from inoculation is not less severe than that contracted in the ordinary way.

number of instances under the most favourable circumstances. With scarcely an exception *the eruption of measles appeared* on the thirteenth or fourteenth day after exposure to the infection. In other words the incubation-period was about ten days.*

These results of Panum's are corroborated by the two following observations:—

Group I.—In February 1878, I was consulted in reference to an outbreak of measles in the Beaumont Catholic College, near Windsor, where I met in consultation Dr. Lowndes of Egham, to whom I am indebted for the following particulars: There were 160 boys in Beaumont; of these about forty were attacked with measles; 100 were known to have had the disease before, and of these only two were attacked. On January 7, one of the pupils was visited by his cousins, who were convalescent from measles. On January 20 (thirteen days) this pupil showed the rash of measles, and on the following day he was seen by Dr. Lowndes, and at once removed to the Sanitorium. There were no more cases until February 3 (thirteen or fourteen days), when a second boy, who had been sickening for at least three days before, showed the rash, and on February 4 twenty-three other boys showed the rash (fourteen or fifteen days). The last case occurred on February 19.

Making allowance for the primary stage, the incubation-period in these cases was about ten days.

Group II.—On March 5, 1878, a son of Dr. Lowndes, aged 16, who was supposed to have had measles years before in India, went to a theatrical entertainment in the great hall of Beaumont College. Several boys convalescent from measles were present. After the entertainment Dr. L.'s son returned to Egham, where, on March 16, he became ill, with loss of appetite, fever, &c., and on March 19, the rash of measles appeared. On March 29 three younger children, who never had measles before, became feverish, and coughed. On April 1 the youngest showed the rash of measles, which on the following day appeared also upon the two others.

Here, in the first case, the incubation-period was eleven days; and as the disease is believed to be most infectious just at the time of the appearance of the eruption, it was probably ten days in the three other cases.

In the two following groups of cases, the particulars of which have been furnished to me by Dr. Bristowe, the incubation-period appears to have been from twelve to fourteen days. But, inasmuch as the dates were not noted at the time, I quote the cases mainly as illustrating the extreme

* 'Archives Gén. de Méd.,' April 1851, p. 451; and 'Edin. Med. Journ.,' June 1851, p. 589.

contagiousness of measles, in its primary, or catarrhal, stage, and the possibility of its propagation by fomites.

GROUP III.—About four years ago there was a party of about twenty children at the house of Mr. D. One of the children was in what turned out to be the second day of the catarrhal stage of measles, the rash not appearing until a day or two later. About twelve days afterwards almost all of the remaining children who were at this party were attacked with measles. Two of these children, while suffering from catarrh, but two days before the appearance of the rash, were present at another juvenile party at the house of Mr. F.; and fourteen days afterwards several of the other children who attended this party sickened with measles, the rash of which appeared four days later.

GROUP IV.—In the spring of 1876, a little girl who had been away for the Easter holidays returned to school. She came about two in the afternoon, and was sent home about six on the same day, either because she had the rash of measles upon her, or because she was ill with symptoms which developed later into measles. At that time all Dr. B.'s children, excepting the three youngest, had had measles; and five of those who were not susceptible were attending the school. When dressed to come home at four o'clock, Dr. B.'s eldest daughter went and talked to the little girl referred to on the stairs; and on reaching home the eldest of the three susceptible children went into her bedroom and helped her to put away her clothes. That day fortnight this little girl sickened with measles, and on the same day several of the pupils at the school were also attacked. About a fortnight later Dr. B.'s two youngest children were taken ill with what was thought to be a very slight attack of measles.

Hooping cough.—Little is known as to the duration of the latent period of hooping cough. According to Squire it is usually about a week *; while, according to Bristowe, it is probably about a fortnight.† In the following three cases, for the particulars of which I am indebted to Dr. Bristowe, it was exactly a fortnight. One of the cases is further interesting as showing the possibility of hooping cough being transmitted by fomites, while all of them prove that the disease is contagious at its very commencement.

CASES.—In the winter of 1874-5 Dr. B's three youngest children, owing to having suffered from severe 'colds' in the previous autumn, were kept in the house in London from the early part of December until May, when the following occurrence took place: They were then in perfectly good health, and for several months had seen no children nor visitors of any sort. But at that time some nephews and nieces of Dr. B. were ill at Sydenham with hooping cough. On Saturday Dr. and Mrs. B. went to dine with his mother, who also resided at Sydenham

* 'The Period of Infection of Epidemic Disease': London, 1874, p. 34.
† 'Treatise on the Theory and Practice of Medicine,' 1876, p. 142.

Hill; and on arriving they found the eldest boy of the family referred to living with her. He had hitherto escaped the disease, and was living with his grandmother in the hope that he might escape it altogether. But on this very Saturday he had for the first time a constant troublesome cough. Mrs. B., being afraid on account of her own children, and believing that the boy was in the early stage of hooping cough, did all she could to avoid him; but he clung to her during the whole evening, climbing on her knee, and coughing and sneezing over her. When she got home at night she took off her dress and laid it over an ottoman under a window in the dressing room, intending next morning to have it hung out in the open air. Unfortunately, however, the eldest of the three children referred to came into the dressing room early next morning and began playing at the window over the dress. As soon as this was noticed she was sent away, and the dress was carried out of doors. Exactly thirteen days afterwards, on the Saturday, this little girl appeared to have caught a bad cold, and ten days later she began to hoop. The two youngest children caught the disease from her, and both sickened about a fortnight after she first showed signs of illness. The seven other children in the family escaped; but they had had hooping cough before.

Typhus Fever.—In this disease also there is no fixed period of incubation. In a paper published in the second volume of the 'St. Thomas's Hospital Reports,' * in which I collected 31 cases where I had been able to determine the period of incubation of typhus fever, I arrived at the following conclusions:—

1. The period of incubation of typhus varies in duration in different cases.

2. In a large proportion of cases it is about twelve days.

3. In exceptional cases it is longer than twelve days; but it rarely, if ever, exceeds three weeks.

4. In many cases (one third or more) it is less than twelve days, and occasionally there is scarcely any latent period, the symptoms commencing almost at the instant of exposure to the poison.

These results were confirmed by Virchow, and also by Obermeier in the Berlin epidemic of 1867–8 †; while of eight cases in which the incubation-period of typhus was determined by Obermeier in the Berlin epidemic of 1873, in two it was seven days, in two it was less than nine days, in one it

* 'On the Period of Incubation of Typhus, Relapsing Fever, and Enteric Fever,' 'St. Thomas's Hospital Reports,' vol. ii., 1872. See also second edition of my work on 'The Continued Fevers of Great Britain,' 1873, p. 90.

† Obermeier, *loc. cit.*

did not exceed ten days, in two it did not exceed twelve days, and in one it did not exceed fourteen days.*

The following case, communicated to me by Dr. T. J. Maclagan, of Dundee, since the publication of my essay referred to, is an additional illustration of an extremely short incubation-period in typhus:—

CASE.—One of the Sisters of St. Mary's Sisterhood, in Dundee, paid a single visit to a patient in the Typhus ward of the Dundee Infirmary (in which were several other patients suffering from the same disease), on the afternoon of November 29, 1873. On returning home she said that she was sure that she had caught the disease; and in the course of the same evening she complained of headache, chilliness, and general malaise. Being a highly nervous and susceptible person, her symptoms were attributed to fear rather than to the typhus poison. They increased in severity, however, and on the morning of December 5 a distinct typhus rash was perceived. The patient was severely ill, but ultimately recovered. The one occasion on which she visited the infirmary was the only one on which she was exposed to the disease. She saw that case only once, and for nearly three months before she had been in no locality where typhus was known to exist. The disease was not epidemic in Dundee at the time, there being only a few sporadic cases here and there about the town.

Enteric fever.—Several circumstances contribute to make it very difficult to obtain satisfactory evidence respecting the incubation-period of enteric fever:—1. The difficulty, in many cases, in deciding when an attack of enteric fever really commences. 2. The circumstance that in fever hospitals nurses and patients rarely take enteric fever. 3. The fact that, in private practice, when the disease has been imported into a healthy locality, according to my experience it very rarely spreads. 4. The difficulty there often is in determining, when a person is seized with enteric fever soon after changing his residence, whether he has brought the disease with him, or whether he has been merely predisposed to the disease by recent arrival in an infected locality. From the facts collected in my former essay, already quoted, I came to the following conclusions respecting the period of incubation of enteric fever:—

1. The period of incubation of enteric fever is most commonly about two weeks.

2. Instances of a longer duration appear to be more common than in typhus or relapsing fever; but it is very

* Obermeier: 'Die ersten Fälle und der Character der Berliner Flecktyphusepidemie von 1873,' 'Berliner Klin. Wochenschrift,' 1873, No. 30.

doubtful if the incubation-period ever much exceeds three weeks.

3. The period of incubation is often less than two weeks, and it may not exceed one or two days.

Some observers, including the late Dr. Parkes, have thought that the period of incubation of enteric fever was shorter when the poison was imbibed with the ingesta than when it was inhaled; but, in many instances of very short incubation which are on record, the poison was apparently inhaled.*

Since the publication of the second edition of my book on 'The Continued Fevers,' in 1873, I have met with the three following cases illustrating the incubation-period of enteric fever.

CASE I.—Mrs. L., aged 30, sickened with enteric fever in London on March 20, 1876. Seven days before (March 13) she had returned from visiting a brother, ill with enteric fever at Brighton, and she had spent four days in his house.

In this case the period of incubation lay between seven and eleven days.

In the next two cases the incubation-period appears to have been as long as twenty-one and twenty-two days.

CASES II. AND III.—On August 31, 1874, Master C. B. sickened with enteric fever at his home at Reigate, where there were local causes to account for the disease.

On August 17 his sister, Miss B., left Reigate for Scotland, where she began to be ill with the same disease on September 7, and from which she was suffering when I saw her in London on September 21.

On September 15 Master E. B., a brother, left Reigate with the other children, who had not been ill, for Eastbourne, and on October 7 he fell ill there with enteric fever. It was stated that there was no enteric fever in Eastbourne at the time, nor had there been in the neighbourhood of the house where the B.'s lived for at least a year before.

On the other hand there were cases of enteric fever at Blairgowrie, where Miss B. remained for a few days while in Scotland; but, while it is not very probable that three members of the same family should within two months contract enteric fever from three different sources, the supposition that all three contracted the disease at Reigate is confirmed by the period of incubation in Miss B. and in the brother being almost identical.

Lastly, I may refer to an outbreak of enteric fever at

* See my essay in the second volume of the 'St. Thomas's Hospital Reports'; also second edition of my work on 'The Continued Fevers,' 1873, pp. 469, 472.

Guildford, in 1867, investigated by Dr. Buchanan, which was of more than usual importance, inasmuch as the latent period, in a number of different persons exposed to the same cause, appeared to be exactly eleven days. The epidemic was restricted with almost absolute precision to the high levels of the town, attacking here the poor and rich alike, but it spared entirely the low-lying parts of the town. The only condition generally coincident with the outbreak was the high service of the town water supply; and it was found that, eleven days before the commencement of the outbreak, water polluted with sewage, which had been stored up for sixteen days, had, *on one day*, been distributed by this service to the 330 houses in which the fever appeared.*

Relapsing fever.—In the second edition of my work on 'The Continued Fevers' (p. 31), I collected 32 cases bearing upon the period of incubation of relapsing fever, which led me to the following conclusions:—

1. The period of incubation of relapsing fever is not fixed, and is even more variable than that of typhus.

2. It is, on the whole, shorter than that of typhus. In nine of the twelve cases in which it was accurately determined it did not exceed nine days; in none of the thirty-two cases was there reason to believe that it exceeded sixteen days; in only four did it certainly exceed twelve days, and in only four others was it possible for this period to have been exceeded; while in thirteen of the thirty-two cases it did not exceed five days.

3. Occasionally, as in typhus, there is no latent period at all: the symptoms commencing almost immediately after the first exposure to the poison.

Since these results were published, relapsing fever is said to have been successfully inoculated on healthy persons, who submitted voluntarily to the operation, by Dr. Motschutkoffsky, physician to the City Hospital of Odessa. The material employed was blood taken from patients in the stage of pyrexia. The period of incubation never lasted less than five, nor more than eight days.†

From the above remarks it is clear that in none of the infectious diseases referred to is there anything like a fixed period of incubation. Still for practical purposes it may be said that they may be divided into two groups, in one of which the incubation-period is long—from one to three

* 'Tenth Rep. of Med. Off. of Privy Council,' p. 34.
† 'British Medical Journal,' March 25, 1876, p. 383.

weeks, or most commonly, from ten to fourteen days*; and in the other it is short, or from one to three or four days, and rarely longer than a week. As examples of the former group, there are the diseases already referred to, viz., small-pox, chicken-pox, measles, hooping cough, typhus, enteric fever, and relapsing fever; to which may be added rötheln, or German measles,† and mumps‡; while, as examples of the second, we have erysipelas, diphtheria, dengue, and scarlatina.

Erysipelas.—With regard to erysipelas, although I cannot lay my hand upon any notes of the incubation-period in cases that have come under my care, my experience leads me to think that it never exceeds a week, and that, as a rule, it is from one to three or four days.

Diphtheria.—Most observers agree in assigning to diphtheria a very short period of incubation. According to Oertels, the latest and best writer upon the disease, it may be stated positively to occupy from two to five days. His own experiments also show that in 'from twelve to twenty-four hours after artificial inoculation upon the surface of wounds, we can detect a greyish white discoloration, a dirty greyish layer, and the other signs of infection.'§

Dengue.—In this disease the latent period has been variously estimated at from one to seven days. Many instances have been observed in which it has only been a few hours. Dr. Charles, in Calcutta, found it to be as a rule about five days.‖

Scarlet fever.—The period of incubation of scarlet fever has been variously estimated by different authorities as follows:—

Binns (quoted by R. Williams)[1]	2 days.
Withering (1779)[2]	3 or 4 „
Gendron (quoted by Noirot)[3]	not over 4 „
Bateman[4]	3 to 5 „

* I purposely exclude here malarious fevers, the morbific agent of which may lie dormant in the system for many months; and hydrophobia, in which it may not manifest itself for years.

† In this disease the incubation-period is said by Squire to be from ten to fourteen days; and by Thomas (Ziemssen's 'Cyclop.') from two to three weeks.

‡ In mumps the incubation-period has been estimated at from eight to twenty-two days. In several cases collected by Squire it varied from fourteen to twenty-two days ('Period of Infection of Epidemic Disease': London, 1874, p. 30).

§ Article 'Diphtheria:' Ziemssen's 'Cyclop. of Med.,' American Trans., vol. i., p. 594.

‖ 'Dengue: its History, Symptoms, and Treatment,' by T. E. Charles, M.D.: Calcutta, 1872.

[1] 'On Morbid Poisons': vol. i., 1836.

[2] 'Account of the Scarlet Fever and Sore Throat': London, 1779.

[3] 'Histoire de la Scarlatine': Paris, 1847, p. 78.

[4] 'Practical Synopsis of Cutaneous Diseases': London, 1813.

J. Frank (quoted by Noirot)[1]	5 days
Cazenave and Schedel (quoted by Noirot)[2]	3 to 6 „
Sir Thomas Watson[3]	not exceeding 5 or 6 „
Willan[4]	never more than 6 „
Guersant and Blache (quoted by Noirot)[5]	3 to 7 „
Thomas and Gerhardt[6]	4 to 7 „
Heberden (quoted by Noirot)[7]	7 „
Samuel Gee[8]	less than a week.
G. Gregory[9]	1 week.
Niemeyer[10]	8 or 9 days.
R. Williams[11] and W. Aitken	a few hours to 10 „
Reinhold[12]	11 „
Bathurst Woodman[13]	2 to 14 „
Böning[14]	14 „
Copland[15]	1 to 25 „
Maton[16]	26 „
Most[17]	1 month.

But hitherto the statements made upon the subject have been based, for the most part, on one or two isolated observations, and no attempt has been made to collect a large number of observations bearing upon the point. So much has this been the case that, in 1861, Trousseau declared that neither in measles nor in scarlet fever could the latent period 'be rigorously determined in the present state of our knowledge';* while, still later, Obermeier gave it as his opinion that the incubation-period of scarlet fever was unknown.† In the *Lancet* for August 13, 1864, I published 13 cases illustrating the incubation-period of scarlet fever; and I came to the conclusion that while in rare instances there was no incubation-period at all, this, in most cases,

[1] Noirot: *loc. cit.*
[2] *Ibid.*
[3] 'Lectures on Pract. of Med.,' 5th ed., 1871, ii., 973.
[4] 'On Cutaneous Diseases,' 1808.
[5] *Loc. cit.*
[6] Ziemssen's 'Cyclop. of Med.,' American Transl., vol. ii., 1875, p. 169.
[7] *Loc. cit.*
[8] Reynolds's 'Syst. of Med.' vol. i., 1866, p. 334.
[9] 'Lectures on the Eruptive Fevers,' 1843, p. 142.
[10] 'Text-Book of Pract. Med.,' American Transl., 1869, vol. ii., p. 533.
[11] 'On Morbid Poisons,' 1836.
[12] Ziemssen's 'Cyclop. of Med.' *loc. cit.*
[13] 'Lond. Med. Journ.,' February 1865, p. 76.
[14] Ziemssen, *loc. cit.*
[15] 'Med. Dict.,' Article 'Infection,' vol. ii., p. 354.
[16] 'Trans. College Phys.,' vol. v., p. 149. Dr. Maton's cases have been quoted by Copland and others as examples of scarlet fever, but after referring to the original paper I consider this very doubtful.
[17] 'Geschicte des Scharlachf.' ii, 178.
* 'Clinique Méd.,' 1861, tome i., p. 4.
† 'Beitrage zur Kenntniss der Pocken': 'Virchow's Archiv für path. Anat. und Physiol. und für klin. Med.,' Bd. liv.

varied from one to five days, and very rarely exceeded six days. I have now collected all the cases of scarlet fever, having any bearing on the period of incubation, that have come under my observation, or been communicated to me during the last twenty years. They are 75 in number, and are as follows:—

Case I.—A female, aged 22, was admitted into the London Fever Hospital on April 22, 1858, on the third day of an attack of scarlet fever, which proved fatal on the eighth day. On April 19 she had come from a part of Oxfordshire where scarlet fever did not exist, to see her sister, who was lying dangerously ill with it in London. She arrived in the afternoon, and on the following morning she was seized with rigors, headache, and sore-throat, and on the 21st a scarlet rash was observed on the skin.

Here the period of incubation did not exceed eighteen hours.

Case II.—Ann W., aged 18, a servant, was admitted into the London Fever Hospital, suffering from scarlet fever, on October 5, 1863. On September 28, a young lady had come from school to the house where Ann W. was in service, ill with scarlet fever, and was waited on by her on the same day. The next day Ann W. was seized with sore-throat, followed by the usual symptoms of scarlet fever.

In this case the period of incubation did not exceed twenty-four hours.

Case III.—For the details of this case I am indebted to the late Mr. Marson, of the Small Pox Hospital. About twenty years ago, a family residing in Gray's Inn Lane, gave a children's party. Before the day one of their own children fell ill with scarlet fever. Not wishing to put off the party, the child was removed to a garret. The party took place on a Monday, the children being at the house from about 4 to 9 p.m. On the Tuesday, between 11 and 12 p.m., a child, residing in a distant part of London, who had attended the party, but was not known to have been otherwise exposed to scarlet fever, was seized with the usual symptoms of scarlet fever, of which she died on the Friday morning.

In this case the period of incubation was somewhere between twenty-six and thirty hours.

Case IV.—On March 19, 1869, about 3 p.m., Mrs. T., aged 40, had a small tumour removed from behind her left ear, by the late Sir William Fergusson. On the evening of the 20th she was taken very ill with fever and vomiting. On the 21st her face and chest were covered with a punctated scarlet rash, which, on the 22nd, when I saw her, had extended to the legs, and had all the characters of scarlatina rash. The other symptoms of scarlatina were also present. On inquiry it was ascertained that the nurse who had come to attend on Mrs. T., shortly before the operation on the 19th, had just left off nursing a child ill with scarlet fever.

Here the period of incubation was less than thirty hours.

Case V.—Mary B., aged 21, was admitted into the London Fever Hospital on September 14, 1863, on the fourth day of an attack of scarlet fever. She had been in service, and on the evening of September 9 she had gone to a 'new place,' at a house at which some of the inmates were suffering from scarlet fever. On the morning of the 11th she had been seized with vomiting and sore-throat, followed by all the ordinary symptoms of scarlet fever.

In this case the period of incubation was less than thirty-six hours.

Case VI.—On March 4, 1863, about 4 p.m., W. F., aged 11, a school-boy, went with some of his school-fellows to a house in which there were cases of scarlet fever, and remained there about two hours. Early in the morning of March 6 he was seized with scarlet fever. which was followed by gastro-enteritis, terminating fatally on March 23.

Here also the period of incubation did not exceed thirty-six hours; but it could not have been much shorter.

Case VII.—On the evening of February 23, 1878, Mrs. M. went from Hampstead to a school at Wimbledon, to nurse her son who was ill with malignant scarlet fever, and on the morning of February 25 she awoke with sore-throat and other symptoms of scarlet fever, which ran a mild course.

Here also the period of incubation did not exceed thirty-six hours.

Case VIII.—On June 13, 1875, I was consulted in the case of Lady A., aged 70, who had a typical scarlatina rash, with sore-throat and redness of the fauces; pulse 96; temp. 101·5° Fahr. She had never had scarlet fever before; but her daughter had had it when over 50 years of age. On June 9 Lady A. had dined out at 8 p.m., returning home about 11 p.m. Of the sixteen persons who sat down to dinner, eight were attacked within five days with scarlet fever, which there were good reasons for attributing to infected cream. (See Dr. Buchanan's report: 'Reports of Medical Officers of Privy Council,' New Ser., No. vii. 1876, p. 72.)

In the forenoon of June 11, Lady A. began to have fever and sore-throat.

In this case the period of incubation seemed to be somewhere between thirty-four and forty hours.

Cases IX. and X.—The Hon. Mr. and Mrs. B., aged respectively about 50 and 40, both dined with the same party as Lady A., on June 9, 1875. Both were taken ill with scarlet fever early on June 11, and on June 19 I saw them both in consultation, with great enlargement of the cervical glands and secondary fever.

The latent period in both cases was probably somewhat between thirty-four and forty hours.

Case XI.—The following case was communicated to me by Dr. Alfred Wiltshire, after reading my paper in the *Lancet*, of August 13, 1864, on the latent period of scarlatina:—

On March 1, 1864, Mrs. M. took her two children, Robert, aged four and a half, and his brother, aged two and a half, to University College Hospital, the latter having rickety deformity of the legs. They were in the out-patient room from two to four p.m. While there Mrs.

M. sat next to a woman nursing a child who was very ill and had its throat wrapped up, and the woman told Mrs. M. that she had four other children at home ill with 'scarlatina and diphtheria.' Mrs. M. kept her younger child in her arms, but Robert stood at her side next to the woman with the sick child. Early in the morning of March 3 Robert was taken ill with shivering, sickness, and drowsiness; in the evening of the same day a scarlet eruption began to appear on the skin, which next morning was very copious and bright all over the body; and on March 8 the boy died. The younger child sickened with scarlatina on March 10, and died with pyæmic abscesses on April 7.

In Robert's case the period of incubation was not longer than forty hours, and not shorter than thirty-six hours.

Case XII.—Mrs. H., about 30 years of age, student of medicine, carefully examined the rash of a child suffering from scarlet fever at two p.m. on March 8, 1878. The examination did not last longer than ten minutes, and she only saw the child on that one occasion. On the morning of March 10 she awoke with sore-throat and fever, and next morning she had a copious and typical scarlatina rash.

Here the period of incubation did not exceed forty-one hours, and was probably not shorter than thirty-six hours.

Case XIII.—On June 10, 1876, a child, A, left Lincolnshire, and arrived in the evening on a visit to a family residing at Shooter's Hill, near Greenwich. She was then apparently in good health, and there was no illness in the house in Lincolnshire from which she came. But in the night of June 11-12, two children, B and C sickened with scarlatina in this house in Lincolnshire; and in the same night A, and D, aged 6, who occupied the same room as A, and had not been away from Shooter's Hill, nor otherwise exposed to scarlatina, fell ill with this disease.

If A fell ill first and D contracted the disease from her, there could have been scarcely any period of incubation; but if, as seemed more probable, the poison was in the clothes of A, or A gave off the poison during the incubating stage, the period of incubation in D may have been forty-eight hours, but not longer.

Case XIV.—Mary Jane G., aged 5, was admitted with scarlet fever into the London Fever Hospital in the afternoon of June 20, 1865. Her brother had been brought home convalescent from scarlet fever on the 18th, and in less than forty-eight hours afterwards Mary Jane was taken ill, and brought at once to the Hospital.

The period of incubation was less than forty-eight hours.

Case XV.—On April 12, 1868, Caroline A., aged 21, was engaged as a nurse in the London Fever Hospital, and on the same day she began duty in one of the scarlet fever wards. On April 14 she was taken ill with what turned out to be a severe attack of scarlet fever.

The period of incubation did not exceed forty-eight hours.

Case XVI.—Alexander D., aged 6, arrived from a locality in Scotland where scarlet fever was then unknown, at an hotel near Piccadilly. late in the evening of March 22, 1873. There had been cases of scarlatina shortly before in this hotel. The exact particulars were

kept back; but it was ascertained that a servant, ill with scarlet fever, had been removed from the hotel to a Fever Hospital a fortnight before, and that some other of the inmates had had sore-throat. On the evening of March 24, A. D. was taken ill with sore-throat, and next morning, when I saw him, he had a scarlatina rash.

In this case the period of incubation did not exceed forty-eight hours.

Case XVII.—Charles D., aged 4, came with his brother, A. D., from Scotland to Piccadilly, on March 22, 1873. (*See last Case.*) C. D. awoke at 3 a.m., on March 27, with vomiting and pyrexia, which were the first symptoms of a typical attack of scarlatina.

Here the period of incubation could not in any case have exceeded four days and six hours; but, on the supposition that C. D. caught the disease from his brother, which was probable, as they occupied the same room, it did not exceed fifty-four hours.

Case XVIII.—Mary H., aged 24, a nurse at the Henrietta Street Nursing Institution, went to nurse a child badly ill with scarlet fever, on the evening of March 12, 1865. During the 13th and 14th she did not feel very well. On the morning of the 15th she had sore-throat and vomited, and in the afternoon the rash of scarlatina appeared. On March 16 she was admitted into the London Fever Hospital, suffering from scarlatina.

The period of incubation in this case could not have exceeded two and a half days.

Case XIX.—Miss B., aged 12, returned to school at Kensington on October 5, 1858. A girl at the school was ill at the time with scarlet fever. On October 8 Miss B. felt feverish and had a sore-throat; and on October 9 the rash of scarlet fever made its appearance. The disease ran its usual course and terminated favourably.

The period of incubation in this case could not have exceeded three days.

Case XX.—T. M., an officer in the Limerick Artillery, aged 22, arrived in London on September 2, 1858. On September 5, in the afternoon, he visited a friend, whose little girl had scarlet fever, but so slightly that she was not confined to bed. He took the girl on his knee and kissed her. On the morning of September 8 he was quite well; but towards evening he was attacked with headache, heaviness, and sore-throat, followed by a dusky, scarlet rash, ulcers on the tonsils, constant delirium, sleeplessness, and great prostration. He died on September 14 at 11 a.m.

In this case the period of incubation was not longer than three days, but neither was it shorter.

Case XXI.—Susan W., aged 16, was admitted into the London Fever Hospital on January 13, 1863, along with her sister, who was ill with typhus. Susan's febrile attack terminated on the seventh day (January 15), with an eruption of herpes on the lips. She never had any typhus eruption, and on January 16 her pulse was 60, and her appetite good. In the night of January 16 she began to complain of pains in the limbs and sore-throat; and next day the rash of scarlet

fever appeared, and the pulse was 108. Although this patient was admitted with her sister into a typhus ward, she was attended by a nurse from a ward devoted to scarlet fever.

The period of incubation in this case could not have exceeded three and a half days.

Case XXII.—Ellen N., aged 4, was admitted into the London Fever Hospital on May 2, 1863, on the fourth day of an attack of scarlet fever, which proved fatal from pneumonia on the eleventh day. This child had been living in a locality where scarlet fever was not known to exist; but on April 25 she had been taken to the workhouse of St. George's-in-the-East, and on the same day she had played there with a child, who was then sickening with scarlet fever, and who was admitted into the London Fever Hospital with this disease in a malignant form on April 27. Ellen N. was taken ill with headache and sore-throat on April 29, and the scarlet rash appeared on April 30.

Here the period of incubation could not have exceeded four days.

Case XXIII.—In the afternoon of May 14, 1863, while from home, I was myself seized with general pains, fever, sore-throat, and great prostration. I did not get home until eleven o'clock, and all next day I was very ill in bed with the same symptoms, but there was no rash. Suspecting that I had scarlatina, I sent for a medical friend to advise me as to sending away my only child; but, by the time that he arrived, late in the evening, I was so much better, that he gave a decided opinion that my attack was not scarlatina, and next morning as I was able to get up and attend to my duties I believed that he was right, and did not send my child away. I have no doubt now from the sequel, and from what I have seen in other cases, that my attack was scarlatina. I may add that at the time I was much exposed to the disease, that I never had scarlatina before, nor have I had it since, and that for many months after that attack I was very anæmic and out of health. On and after May 16 I saw my child as usual. On the morning of May 20 she was attacked with scarlatina in a malignant form, of which she died on the 27th.

The period of incubation in this case could not have exceeded four days.

Case XXIV.—On April 1, 1878, Master P. left school at Wimbledon on the fortieth day of an attack of scarlatina for his home at Brighton. Before leaving desquamation had to all appearances quite terminated, the feet having desquamated twice. Also he had had repeated carbolic acid baths, and he had left all his infected clothes behind. After reaching Brighton, his face and feet desquamated again; and four days after his arrival his mother fell ill with scarlet fever.

Here also the period of incubation did not exceed four days.

Cases XXV. to LIV.—The following remarkable history was communicated to me in 1865 by Dr. J. Hogarth Pringle, then at Parramatta, New South Wales, in reference to my papers on the Etiology of Scarlatina, which had appeared in the 'Lancet' of the previous year. I quote from his letter:—

'In the month of April, 1858, I was surgeon of one of the large steamships, plying between Australia and Suez, in the Royal Mail Service. We left Sydney in April, carrying 147 first-class passengers, of whom upwards of forty were children under ten years of age. We had no sickness on board until one day after leaving Aden, or forty-six days after leaving Sydney, when scarlatina made its appearance, and before reaching Suez (four days) thirty cases had occurred. Now, when we left Sydney there was no scarlet fever there, nor was there any at Melbourne, King George's Sound, Galle, or Aden, the only ports at which we touched. I was most careful to ascertain this on my return passage. But a family on board had up to nearly three weeks before their embarkation resided with friends in Queensland who had scarlatina. None of the family who were on board had at that time contracted the fever; but the light clothing they had worn in the semi-tropical heat of Queensland had been packed up there for the voyage, and the boxes had not been opened until after leaving Aden and reaching the terrible summer-heat of the Red Sea, when it was unpacked and again called into use. It was in this family that the two first cases occurred, after an interval of upwards of three months since they and their infected garments had left the house in Queensland where scarlet fever had raged. The rapidity with which the disease was developed in the vessel tends to prove what I think I have been frequently assured of, that the incubatory stage of scarlatina is very short.'

This is certainly a most remarkable and telling story bearing on the period of incubation of scarlatina. Presuming that most, if not all, of those attacked on board ship were children, out of rather more than forty exposed, thirty were attacked within four days. At all events, in none of the thirty cases could the period of incubation have exceeded four days; in many it was probably much shorter than this, as they may have contracted the disease from those who first sickened rather than from the originally infected clothes; while in two at least of those first attacked, the incubation-stage seems to have been less than twenty-four hours.

Case LV.—Robert W., aged 44, was admitted into the London Fever Hospital on September 17, 1858, on the fifth day of scarlet fever. On September 8 he went to act for a coachman, who, with his children, were laid up with the disease. He did not sleep in the house, and never entered the sick-room; but late in the afternoon of September 8 the coachman, though ill, came out to speak to him, and gave him a cup of tea out of his hand. On the morning of the 13th, Robert W. fell ill with scarlet fever, the rash appearing on the 14th.

The period of incubation in this case was four and a half days.

Case LVI.—Thomas B., aged 16, was admitted into the London Fever Hospital on October 15, 1858, on the fifth day of scarlet fever, and on the eleventh day he died. Four and a half days before his seizure he arrived from sea, and went to his mother's house where scarlet fever was. Three of the family had died of it, and a fourth was not expected to live.

Here the period of incubation could not have exceeded four and a half days.

CASES LVII. TO LXXII.—Reference has already been made (see Case VIII.) to a dinner party which took place on June 9, 1875, and where eight of the sixteen persons who constituted the party were within five days attacked with scarlet fever, which was probably due to infected cream. But this was not the whole extent of the calamity. To quote from Dr. Buchanan's Report above referred to:—

'Within five days of June 9, twelve persons who were in the house on that day are attacked with scarlatina, and six others with sore-throat, or with sore-throat and other symptoms resembling scarlatina. Besides these there was a nineteenth attack in the person of K., a lady who was not in the house on June 9, but who lunched there on the 10th, and was taken ill with slight scarlatina (second attack) on the 14th' (p. 73).

I have already shown that in three at least of the nineteen cases the incubation-period was less than two days; and no doubt this was the case with others; but deducting these three cases, here in all of sixteen cases, occurring under like circumstances, the incubation-period was less than five days.

CASES LXXIII. AND LXXIV.—On January 10, 1864, a girl returned to the Sailors' Home at Hampstead from visiting a house where scarlet fever was. She did not take the fever herself; but on the 15th another girl in the Home was attacked, and on the 16th a second case occurred. The only discoverable source of the poison was that now stated.

In these two cases the period of incubation may have been (though not necessarily) as long as five and six days respectively; but it could not have been longer.

CASE LXXV.—On Tuesday in March, 1878, a young lady, A, sickened with scarlatina at a school at Putney. On the following Thursday, a second young lady, B, left the school for her own home where there was no scarlatina. On the Monday following B fell ill with scarlatina.

The period of incubation was somewhere between four (not less) and six (not more) days.

These are all the cases in which I have succeeded in tracing the latent period of scarlet fever. It will be seen that in some this period was less than twenty-four hours, and that in none did it exceed six days. The cases where the disease was contracted at a dinner party (Cases VIII., IX., X., and LVII. to LXXII.) and on board ship (Cases XXV. to LIV.) are of particular interest, as showing that when a large number of persons became infected from a common source the incubation period was in every instance short. In all of the 75 cases it was possible to fix the maximum limit of the latent period.

Thus:—

In	4	Cases it did not exceed	24	hours.	I., II., XXV., XXVI.
	2	" "	30	"	III., IV.
	3	" "	36	"	V., VI., VII.
	4	" "	40	"	VIII., IX., X., XIII.
	1	" "	41	"	XII.
	4	" "	48	"	XI., XIV., XV., XVI.
	1	" "	54	"	XVII.
	1	" "	2½	days	XVIII.
	2	" "	3	"	XIX., XX.
	1	" "	3½	"	XXI.
	31*	" "	4	"	XXII., XXIII., XXIV., XXVII. to LIV.
	2	" "	4½	"	LV., LVI.
	17†	" "	5	"	LVII. to LXXII., LXXIII.
	2	" "	6	"	LXXIV., LXXV.
Total	75				

In only 10 of the cases was it possible to determine the shortest limit, as most of the patients remained within the sphere of the poison from the moment of their first exposure up to the date of their illness. This is a point often lost sight of in investigations of this sort. The minimum period of incubation in the 10 cases was as follows:—

In	1	Case it was	26	hours.	III.
	3	"	34	"	VIII., IX., X.
	3	"	36	"	VI., XI., XII.
	1	"	3	days	XX.
	1	"	4	"	LXXV.
	1	"	4½	"	LV.
Total	10				

In only 3 of the cases could the moment of infection be fixed with precision, viz., in Case VI. (thirty-six hours); Case XX. (three days); and Case LV. (four-and-a-half days).

It follows that, of the total 75 cases, in not one did the incubation-period exceed six days; in 73 cases it could not have exceeded five days; in 54 cases it could not have exceeded four days; in 20 cases it could not have exceeded three days; in 16 cases it could not have exceeded two days; and in 3 cases it could not have exceeded twenty-four hours. It also appears that the longest period of incubation made out in any of the cases was four-and-a-half days (Case LV.);

* There are good reasons for believing that in a large proportion of these cases the incubation-period was much under four days (See Cases XXV. to LIV.).

† Inasmuch as in only 3 of the 19 cases contracted at an evening party was the incubation-period made out with certainty, and as in all three it was less than two days (Cases VIII., IX., X.), in many of the remaining 16 cases it was probably much under five days.

and that in only 2 of the cases was it certainly as long as four days (Cases LV. and LXXV.).

The above cases lend no support to the opinion expressed by some writers to the effect that the latent period of scarlet fever is longer in adults than in children, nor to the statement of Thomas, in his recent article, that scarlet fever differs from all the other acute exanthemata in the great variation of its incubative stage.* Also the common argument that scarlatina has not been transmitted by a nurse, or the medical attendant, because of the short interval that has elapsed between their first communication with the patient and the appearance of the disease, is hereby shown to be untenable.

The following observations, recorded by other physicians, are additional illustrations of the short period of incubation in scarlatina. Dr. B. W. Richardson relates that once when he was attacked, the effect of the poison was instantaneous. He had applied his ear to the chest of a patieut suffering from scarlet fever, and was conscious of a peculiar odour emitted by the patient. He immediately felt nauseated and chilly, and from that moment he was able to date the commencement of his illness.† A remarkable case was observed by the late Professor Trousseau, in the beginning of 1859. A London merchant had spent the winter at Pau with one of his daughters, and on his way back to England he remained for a few days in Paris. Here he was joined by another daughter, who came direct from London. Scarlet fever was prevalent in London, but there was not a case of it at Pau. The daughter from London was seized with scarlet fever in crossing the Channel, and joined her relatives in Paris seven or eight hours‡ later. She there occupied the same room in the hotel as her sister, who was attacked within twenty-four hours.§ 'My bootmaker,' says Sir Thomas Watson, 'went down from London to Devonshire to see his wife and children. Arriving on a Sunday, at noon, he unexpectedly found that one of his children had scarlet fever. On Monday he took a gallop with some hounds, and in the evening felt unwell. On Tuesday he had sore-throat and sickness, which proved to be early symptoms of a thorough attack of scarlatina.‖ In Hanau, where there was no scarla-

* Ziemssen's 'Cyclop.' American Trans., ii., 170.

† 'Clinical Essays,' 1861, vol. i., p. 94.

‡ Not *days*, as rendered in Syd. Soc. Transl., vol. ii., 165.

§ 'Clinique Méd.,' 1861, vol. i., p. 5.

‖ 'Lectures on Medicine,' 5th ed., 1871, ii., 973.

tina, Rehn saw a child attacked two days after its grandmother had returned from nursing a scarlatinous patient in Stuttgart. Russegger saw a child who had visited a scarlatinous patient at noon, taken sick the same night. He gives another instance, where three children visited a sick friend in a neighbouring village: two of these children took scarlatina two days after, and the third was attacked on the day following. At Wangen, where previously no case of scarlatina had occurred, Zengerle reports that a girl, aged 10, was taken sick two days after her mother had visited a family sick with scarlatina in a neighbouring town. Löschner states that a boy, aged 4½ years, who entered the hospital for the treatment of a sarcoma, was attacked a day and a half after his admission, and that the hospital could have been the only source of infection. Fleischmann observed the infection with scarlatina of two variolous children who had been placed near the scarlatina ward, and in each case three days intervened between their admission into hospital, i.e. the earliest possible period of infection, and the beginning of the disease. Gerhardt reports that a man was attacked with scarlatina four days after an abscess from which he suffered had been opened with a knife, used for the same purpose in a scarlatinous patient a few hours before. Pons also calculated the period of incubation with certainty at four days, in a case to which he had himself brought the contagion.* Of 10 cases narrated by Dr. W. Squire, the period of incubation was one day in 1 case, under two days in 1 case, two days in 6 cases, under three days in 1 case, and under four days in 1 case.† Lastly, Rostan refers to cases where the *eruption of scarlet fever appeared* seven days after inoculation with the poison, the incubating period being therefore probably five or six days.‡ It may be added, however, that in Miquel's experiments with inoculation, the incubation-stage lasted only thirty hours.§

By a further appeal to medical literature it would not be difficult to multiply the instances in which the incubation

* I quote these German cases on the authority of Thomas. See his article on Scarlatina in Ziemssen's 'Cyclopædia of the Practice of Med.,' Eng. ed., 1875, vol. ii., p. 167.

† 'The Period of Infection in Epidemic Disease' (Reprint from 'Trans. of Epidem. Society of London,' 1874, p. 38).

‡ 'Clinique Méd.,' 2me éd., 1830, vol. ii., p. 186.

§ 'Lançette Française,' 1834, p. 202. An account of these and other experiments on inoculation of scarlatina will be found in the 'Lancet' for August 13, 1864. (See also Thomas, *loc. cit.* p. 162.)

period of scarlatina has not exceeded a few days; and although it would also be possible to adduce cases in which it is said to have exceeded one week, or to have been two, or three weeks, or even longer, the cases of this sort to which any value can be attached are remarkably few. For example, the cases quoted by Thomas from Paasch, Böning, and other observers, where certain children sickened twelve or fourteen days after other members of the same family had commenced to be ill, show only the possible *maximum* incubation period, and are therefore not to the point.* About the best instance of long incubation-period in scarlatina with which I am acquainted is one recorded by Dr. W. Squire, where a boy, 2½ years old, was removed from an infected house for quarantine, and his temperature carefully taken. On the morning of the eighth day after removal the temperature in the axilla was slightly above the normal standard; by night the temperature had risen considerably; and next day the rash of scarlatina appeared.† Notwithstanding this case, subsequent experience satisfied Dr. Squire that when children are removed from a source of infection by scarlet fever, if any take it they will most probably sicken within a week.‡ Some years ago it was stated by Gerhardt that very accurate observations made by his assistant, Reinhold, indicated an incubation-period of eleven days; but more recently, Gerhardt has come to the conclusion that the normal period does not exceed seven days.§ Among cases where the incubation-period has been said to extend over several weeks, reference may be made to those narrated many years ago by Most, in which it was believed to be a month; ‖ and in particular to a case recorded in the *Lancet* for August 20, 1864, by Dr. Reginald Thompson. In October 1862, scarlet fever was epidemic at Betchworth. On October 4, the little daughter of the coachman of the late Sir Benjamin Brodie, who went to school at Betchworth, was seized with it. Sir Benjamin's grandchildren had had communication with this child, but on October 6 were sent off to Oxford. On October 28, or twenty-two days afterwards, the eldest girl, aged 13, sickened with scarlet fever at Oxford, where, it is stated, the disease did not exist, either then or for some time before. Now,

* Ziemssen's 'Cyclop.,' *loc. cit.*, vol. ii., p. 169.

† 'Infantile Temperatures in Health and Disease' ('Trans. Obstet. Soc. of London,' vol. x., p. 169).

‡ 'Period of Infection in Epidemic Disease': London, 1874, p. 35.

§ Ziemssen's 'Cyclop.,' *loc. cit.*, vol. ii., p. 169.

‖ Geschichte des Scharlachf. ii., 178.

without denying the possibility of such a lengthened incubation-period in scarlet fever, my experience would induce me to suspect that in these and such like cases there was some fallacy. There may have been other undiscovered sources of infection, or the poison may have been lurking in the clothes rather than in the bodies of the individuals who were secondarily attacked. For example, in the case which I have narrated, where scarlet fever broke out in a ship at sea, upwards of three months after those first attacked had been exposed to the poison, had no mention been made of the box of infected clothes it might have been contended that the incubation-period was over three months (see Cases XXV. to LIV.). So also in the case of Hildenbrand. He is said to have caught scarlet fever from his own cloak, which, after exposure to the poison, had been locked up for eighteen months; and it has been well remarked that had he put on this cloak at the end of one, instead of at the end of eighteen months, after visiting the patient who infected the cloak, and been then attacked, the case would have been quoted as one proving the possibility of the incubation-period extending over four weeks. In reference also to these cases of long incubation-period of scarlatina I may add that during many years it has been my practice to pronounce persons, who had been exposed to the infection of scarlet fever, safe after a quarantine of seven days, provided their clothing had been properly disinfected: and that so far I have seen no reason to alter this rule.

My observations and study of the incubation-period of scarlet fever have led me to the following conclusions:—

1. The duration of the incubation-stage may be only a few hours.

2. Probably in a large proportion of cases it does not exceed forty-eight hours.

3. It very rarely exceeds seven days.

4. Consequently, a person who has been exposed to scarlet fever, and does not sicken after a week's quarantine, may be pronounced safe.

Duration of Contagiousness in Infectious Diseases.

It is not my intention to discuss at length this question on the present occasion. With regard to measles, however, I may be permitted to observe that, while the cases in Group III. confirm the general impression that measles is very

infectious in the catarrhal stage, before the appearance of the eruption, and thus explains the difficulty or impossibility of preventing its spread in schools, Group II. shows that, contrary to the opinion expressed by Panum,* the poison continues to be given off during convalescence.

The cases given under the head of Hooping Cough show that this disease also is infectious from its very commencement, long before the development of the hoop.

In my work on 'The Continued Fevers'† I have discussed the question as to what stage of typhus is most contagious.

Many facts, such as that quoted above from Trousseau (*antea*, p. 258), show that scarlatina has an infecting power from the earliest stage of the malady, although the comparative facility of preventing its spread in a school, when the first case is promptly isolated, points to this power being much less during the first two or three days than in the case of measles. On the other hand scarlatina has the power of infecting over a period of many weeks. The ordinary practice of pronouncing a patient safe at the end of a month, or after the apparent cessation of desquamation is not always safe. This is proved by Case XXIV., where a patient convalescent from scarlatina imparted the disease after the fortieth day, and after desquamation had to all appearances quite terminated, and also by other cases which have come under my notice. It is a good rule, I believe, to regard no case as safe until the expiration of the eighth week.

A question of great interest in reference to the stage of contagiousness of infections, and bearing also upon the duration of their incubation-period, is, whether a person in whom a contagious disease is incubating, and who has no symptoms, can impart the disease to another? There are some facts which render this probable. Perhaps the most important is one related by Curschmann in regard to small-pox. In the Charité Hospital of Berlin, small pieces of skin were taken, for transplantation upon other individuals, from the amputated arm of a person who, before and at the time of the amputation, did not manifest the slightest symptom of general disease. Several hours after the amputation the patient was attacked with violent fever, followed two days later by

* Panum observes: 'It is generally believed that measles is peculiarly contagious during the desquamative stage. On what foundation does this opinion rest? I cannot tell: for my own part I have never seen a case to convince me that contagion took place at the desquamative stage' ('Edin. Monthly Journ. of Med. Sc.' June 1851, p. 591).

† Second ed., 1873, p. 92.

an eruption of small-pox. One of the individuals upon whom the skin had been transplanted was attacked by variola on the sixth day after the operation (about the duration of the incubation period in inoculated small-pox); the three others, who probably were protected, remained exempt.* There are also many observations on record showing that the bite of a dog infected with rabies may give hydrophobia, although the rabies is still in its incubating stage, and the animal to all appearance well. Thamhayn has collected nineteen cases of hydrophobia in the human subject, which originated in this way; eighteen of the nineteen patients died, and the dogs in every instance became subsequently rabid.† Thirdly, there are facts which make it probable that erysipelas may be communicated during the period of incubation. Thus, Doepp relates how vaccine lymph was taken from a child, who the day after was attacked by erysipelas. Nine other children were vaccinated with this lymph, every one of whom took erysipelas. ‡

These observations suggest a line of investigation in connection with the acute specific diseases which has still to be worked out. I have already suggested that in one of the cases of scarlatina, which I have now placed on record, the disease might possibly have been contracted from another person in whom it existed only in the incubation-stage (Case XIII.). There were, however, in this case, other possible sources of infection. In all of the observations now referred to, the disease was communicated in the incubation-stage by inoculation; and, so far as my knowledge extends, there are, as yet, no facts on record which prove that acute specific disease can be transmitted during the incubation-stage, either by mere contact or through the atmosphere.

Appendix.

Since the above paper was written, I have received from Dr. J. Ford Anderson the particulars of the four following cases of scarlatina, one of which I saw in consultation. The children belonged to one family circle, and lived in a district where Dr. Anderson was practising, and where, so far as he

* Curschmann, Article on Small Pox in Ziemssen's 'Cyclop. of Med.' American Transl., vol. ii., 1875, p. 335.

† Quoted by Bollinger in his article on Hydrophobia, Ziemssen's 'Cyclop. of Med.' American Transl., vol. iii., p. 440, 474.

‡ Quoted by Zuelzer in his article on Erysipelas, *Ibid.* ii., 436, 437.

knew, there were no other cases of scarlet fever. Dr. Anderson is inclined to think that they illustrate a longer period of incubation in scarlatina than accords with my experience. I am not, however, altogether satisfied upon this point.

With regard to Case I., Dr. Anderson himself asks: Did incubation date from March 4 (known infection), twelve days; or from March 13 (no known infection), three days? Now, for my part, with my experience of the incubation-period of scarlatina before me, and with my knowledge of the risks of London cabs and London crowds, I would, if I had to choose between the two alternatives, be inclined to the latter. But I cannot help suspecting that there may have been a source of infection in the residence of H. M. A. which was not discovered. We must either admit this, or we must admit that H. M. A. gave scarlatina to the fourth case 'a few days before his own illness began.' From what I have stated in the above essay, this, of course, may have been possible; but it is a pathological possibility which has still to be demonstrated. In the present state of our knowledge, however, I think the case is worthy of being placed on record.

In Case II., where the period of incubation was, at the outside, not longer than seven days, there is, perhaps, nothing very remarkable; but, of course, the period might be reduced to five days, if there be any force in the exception taken to Case I., to say nothing of the possibility of the isolation of H. M. A. during the first two days not having been so complete as was believed.

With regard to Case III., Dr. Anderson notes: 'C. F. A's incubation-stage lasted either nine days or thirty-six hours.' Knowing, as I do, how readily scarlatina may be propagated by medical men and nurses, I have no hesitation in giving my opinion that the incubation in this case was, most probably, thirty-six hours: a period which would correspond very closely with that of many of my cases. Moreover, on the supposition that the latent period in this case was nine days, C. F. A. must have caught the disease from H. M. A., while it was still incubating in him.

Case I.—H. M. A., a boy, aged 12, on March 4, 1878, sat at school next to another boy, who had sore-throat and a rash, which on the evening of same day was pronounced to be that of scarlet fever. H. M. A. was withdrawn from school from that day, and spent his time

playing in private grounds at Hampstead. On one occasion only, viz. on March 13, he left home and went in a four-wheel cab to the Grosvener Picture Gallery in Bond Street. He was one of a large family, and there had been no other case of scarlatina in or about his residence. On March 16 he was attacked with scarlatina.

Case II.—M. C. H., a child, twelve months old, was playing in H. M. A.'s bed on the morning of March 16, 1878, before H. M. A. was discovered to have scarlatina. H. M. A. was isolated at once. M. C. H. remained in the house till March 18, but had no further communication with H. M. A., direct or indirect. On March 18, M. C. H. was removed to lodgings, known to be free from infection, but on March 23 was attacked with scarlatina.

Case III.—C. F. A., a boy aged six, played with H. M. A. on March 15, i.e. the day before H. M. A. was attacked with scarlatina, and then returned to his own home at some distance, where, on March 24, at 10 p.m., he was attacked with scarlatina. The only other known source of infection was that Dr. A., the father, in the capacity of medical attendant, saw M. C. H. for five minutes on the morning of March 23, not touching the patient much, but simply diagnosing the disease and giving a few directions. An hour after he went home to luncheon and C. F. A. was in the room.

Case IV.—Besides these three cases, a little girl in the same family circle took scarlatina, in whom the only known source of infection was that she played with H. M. A., 'a few days before his illness began' (on what particular day Dr. A. could not say).

INDEX.

PAGE

AIKMAN (John), case of Injury to the Lower Part of the Spinal Cord, followed by Wasting and Contraction of the Muscles of the Lower Extremities 16

ALTHAUS (Julius), case of Chorea complicated with Epilepsy in the Adult Male 62

Anæsthesia in a case of Hysteria in a Boy (H. Thompson) . 5

——— Hysterical, of both Legs below the Knee; treatment by Metallic Bands: cure (W. H. Broadbent) . . . 13

Aneurysm, Popliteal, for which the Femoral Artery was Ligatured twice (C. Heath) 49

——— ——— treated by Ligature of the Superficial Femoral Artery with Carbolized Gut; Aneurysm at Seat of Ligature (T. Smith) 51

——— of the left Subclavian and Axillary Arteries treated by Enforced Rest and a very Limited Diet (J. W. Hulke) . 123

——— Thoracic, co-existence of, in a case of Multiple Papillomatous Growths in Larynx, extirpated by complete Laryngotomy (J. B. Yeo and J. Lister) 104

Aphasia, slight, in a case of Imperfect Right Hemiplegia (T. Buzzard) 205

——— cases of Spurious (W. H. Broadbent) . . . 37–40

——— See *Hemiplegia*

Arteries, cases to Illustrate the Behaviour of Carbolized Catgut Ligatures on (T. Bryant) 1

Artery, Basilar, Embolism of, Left Hemiplegia, &c., probably due to (J. B. Walker) 32

——— Right Brachial, Temporary Obliteration, in case of Imperfect Right Hemiplegia (T. Buzzard) 205

PAGE

Artery, Femoral, Ligature of, twice, in a case of Popliteal Aneurysm (C. Heath) 49
——— Superficial Femoral, Ligature of, with Carbolized Gut, in a case of Popliteal Aneurysm (T. Smith) 51
——— Irregular Obturator, wounded in the operation for Strangulated Femoral Hernia (A. E. Barker) 180
——— ——— Digest of Similar Cases, with Treatment and Results 183
——— See *Aneurysm.*
Athetosis (?), case of (F. Taylor) 118
Atrophy, Unilateral, with Muscular Spasm (F. Taylor) . . 118

Barker (Arthur E.), case in which an Irregular Obturator Artery was wounded in the operation for Strangulated Femoral Hernia 180
——— Digest of Similar Cases, with Treatment and Results . 183
Barlow (Thomas) and Howard Marsh, case of Ovariotomy in a child aged twelve years 175
Bellamy (Edward), case of unusually large Calculi removed by External Incision from a Sac communicating with the Penile Urethra 22
Bleeding, case of Convulsions treated by (W. H. Broadbent) . 55
Bloody Fluid, Effusion of, into Right Pleural Cavity, at the age of 76. Paracentesis: recovery (W. H. Broadbent) . . 136
Breast, Cancer of the, two cases (T. W. Nunn) 98
Bridges (——) Notes of Dr. Broadbent's case of Hysterical Anæsthesia 13
Broadbent (W. H.), case of Hysterical Anæsthesia of both Legs below the Knee; treatment by Metallic Bands: cure . 13
——— cases of Spurious Aphasia; Hemiplegia with Peculiar Phonation, &c. 37–40
——— case of Convulsions treated by Venesection 55
——— case of Rapid Effusion of Bloody Fluid into the Right Pleural Cavity, at the age of 76. Paracentesis: recovery . 136
——— case of Right Pleurisy with Effusion. Sudden Death . 140
——— Notice of Professor Charcot's Experiments on Hysterical Anæsthesia 15
——— Remarks on J. B. Walker's case of Left Hemiplegia and Hemianæsthesia 32, 34
Bromide of Potassium. See *Potassium.*
Brown (George), Sequel of a case of Cancer supervening on Ichthyosis of the Tongue of twelve years' standing (in Vol. X. of the 'Transactions') 222

PAGE

BRYANT (Thomas), cases to Illustrate the Behaviour of Carbolized Catgut Ligatures upon Human Arteries . . 1
——— case in which Sudden Death followed the Operation of Tapping an Hydatid Cyst of the Liver 230
——— ——— Post-mortem by Dr. Hilton Fagge . . . 232
BUZZARD (Thomas), case of Imperfect Right Hemiplegia with Slight Aphasia, Double Optic Neuritis, and Temporary Obliteration of Right Brachial Artery 205

Cacotrophia Folliculorum (T. Fox) 163
Calculi, unusually large, removed by External Incision from a Sac communicating with the Penile Urethra (E. Bellamy) . 22
Calculus, large Urethral, case of (Sydney Jones) . . . 23
CALLENDER (Geo. W.), Note on Tendon Ligatures . . . 103
Cancer, supervening on Ichthyosis of the Tongue of twelve years' standing, Sequel to case of, in Vol. X. of the 'Transactions' (G. Brown) 222
——— of the Breast, two cases (T. W. Nunn) . . . 98
Carbolized Catgut. See *Catgut.*
Catgut, Carbolized, Ligatures, cases to illustrate the Behaviour of, upon Human Arteries (T. Bryant) 1
——— Ligature of Superficial Femoral Artery, in a case of Popliteal Aneurysm; Aneurysm formed at Seat of Ligature (T. Smith) 51
Cerebro-Spinal Sclerosis, Lateral, case of (T. S. Dowse) . . 18
CHARCOT, Notice of his Experiments on Hysterical Anæsthesia at the 'Salpêtrière' (Dr. Broadbent) 15
Chorea complicated with Epilepsy in the Adult Male (J. Althaus) 62
Chrysophanic Acid, in a case of Psoriasis (B. Squire) . . 90
Cleft Palate. See *Palate* (*Cleft*)
Contagiousness in Infectious Diseases, Duration of (C. Murchison) 261
Convulsions, case of, treated by Venesection (W. H. Broadbent) 55
CRIPPS (W. Harrison), case of Gastrotomy for Acute Intestinal Obstruction 224
CROCKER (H. Radcliffe), case of Eruption from Bromide and Iodide of Potassium 95
Cyst. See *Hydatid* Cyst.

DAY (W. H.), Sequel and Fatal Termination of a case of Lymphatic Enlargement of the Right Leg and Thigh. (See 'Transactions,' Vol. II.) 214
Dengue, Period of Incubation of (C. Murchison) . . . 248

PAGE
Diphtheria, Period of Incubation of (C. Murchison) . . . 248
Dowse (Thomas Stretch), case of Cerebro-Spinal Lateral Sclerosis 18
Dupré (——), Analysis of Fluid from a Spina Bifida . . 79

Effusion in a case of Right Pleurisy (W. H. Broadbent) . . 140
——— Rapid, of Bloody Fluid into Right Pleural Cavity. Paracentesis: recovery (W. H. Broadbent) . . . 140
Electrolysis, cases of Epulis treated by (T. W. Nunn) . . 157
Electro-Magnets, Value of, for Removal of Iron or Steel Chips from within the Eye (M. McHardy) 128
Embolism of Basilar Artery, Left Hemiplegia, &c., probably due to (J. B. Walker) 32
Enteric Fever, Period of Incubation of (C. Murchison) . . 245
Epilepsy, Chorea complicated with, in the Adult Male (J. Althaus) 62
Epulis, cases of, treated by Electrolysis (T. W. Nunn) . . 157
Eruption from Bromide and Iodide of Potassium (H. R. Crocker) 95
Erysipelas, Period of Incubation of (C. Murchison) . . . 248
Erythema Multiforme, Œdematous and Hæmorrhagic (T. Fox) 85
Excision of the lower part of the Rectum (T. Holmes) . . 113
———, Subperiosteal, for removal of Os Calcis; Dissection of the Foot (T. Holmes) 117
Exostosis, two cases of True Subcutaneous Operation for (C. F. Maunder) 59
——— ——— of the Femur 59
——— ——— of the Tibia 60
Eye, value of Electro-Magnets for Removal of Iron or Steel Chips from within the Eye (M. McHardy) 128

Face, see *Lupus* of.
Fagge (Hilton) Post-mortem in Mr. T. Bryant's case of Tapping an Hydatid Cyst of the Liver 232
Follicular Mal-Nutrition: Cacotrophia Folliculorum (T. Fox) . 163
Foot, description of the Dissection of a Foot from which the Os Calcis had been removed by Subperiosteal Excision (see 'Trans.,' Vol. VIII., p. 77) (T. Holmes) 117
Fox (Tilbury) two cases of Severe Iodide of Potassium Eruption 40
——— severe case of Erythema Multiforme, Œdematous and Hæmorrhagic 85
——— cases of Follicular Mal-Nutrition (Cacotrophia Folliculorum) 163

Gastrotomy for Acute Intestinal Obstruction (W. H. Cripps) . 224

PAGE

GOULD (A. Pearce) case of Spina Bifida successfully treated by Injection of Iodine 75
Gout, Connection of Hæmorrhagic Retinitis with (J. Hutchinson) 132
GOWERS (W. R.) case of Unilateral Gunshot Injury to the Spinal Cord 24
GREENFIELD (W. S.) and ALFRED LEGGATT, fatal case of Yellow Fever, occurring in London 187
Growths, see *Papillomatous* Growths.
Gunshot Injury, Unilateral, to the Spinal Cord (W. R. Gowers) 24
Gut, see *Catgut.*

Hæmorrhage, Severe, following the Operation for Cleft Palate, stopped by Plugging the Posterior Palatine Canal (H. Marsh) 71
Hæmorrhagic Retinitis, and its connection with Gout and Thrombosis of Veins (J. Hutchinson) 132
Hammer Toes, cases of, showing their Relation to Spinal Mischief (T. W. Nunn) 153
HEATH (Christopher), case of Popliteal Aneurysm, for which the Femoral Artery was Ligatured twice 49
Hemianæsthesia and Left Hemiplegia, with Diminution of Motor Power, Loss of Speech, &c. (J. B. Walker) 32
Hemiplegia, Left, and Hemianæsthesia, with Diminution of Motor Power and Sensation, Loss of Speech, &c., probably due to Embolism of Basilar Artery (J. B. Walker) 32
——— ——— with Imperfect and Peculiar Phonation, &c. (W. H. Broadbent) 37
——— ——— with Loss of Speech, &c. (W. H. Broadbent) . 39
——— Imperfect Right, with slight Aphasia, Double Optic Neuritis, &c. (T. Buzzard) 205
Hernia, Strangulated Femoral, Wound of an Irregular Obturator Artery in the Operation for (A. E. Barker) 180
——— ——— Digest of similar cases, with Treatment and Results 183
Herpes, Abortive (A. Sangster) 212
HEWETT'S (Prescott) Remarks on cases of Spina Bifida, notice of 78
HILL (Berkeley), cases treated by Sayre's Jacket 80
HOLMES (Timothy) case of Excision of the Lower Part of the Rectum 113
——— Description of the Dissection of a Foot from which the Os Calcis had been removed by Subperiosteal Excision [case in Vol. VIII. of 'Transactions,' p. 77] 117
Hooping Cough, Period of Incubation of (C. Murchison) . . 243

PAGE

HULKE (J. W.) case of Aneurysm of the Left Subclavian and Axillary Arteries treated by Enforced Rest and a very Limited Diet 123
HUTCHINSON (Jonathan) on Hæmorrhagic Retinitis, and its Connection with Gout and with Thrombosis of Veins . . 132
Hydatid Cyst of the Liver, Sudden Death following the Operation of Tapping (T. Bryant) 230
Hysteria, with Contraction of the Lower Limbs, Anæsthesia and Ischæmia in a Boy (H. Thompson) 5
Hysterical Anæsthesia. See *Anæsthesia.*

Ichthyosis of the Tongue of twelve years' standing, followed by Cancer, sequel to case in Vol. X. of the 'Transactions' (G. Brown) 222
Immersion, Prolonged Daily, in a case of Psoriasis (B. Squire) . 90
Incubation, Period of, of Scarlet Fever and some other Diseases (C. Murchison) 238
Infectious Diseases, Duration of Contagiousness of (C. Murchison) 261
Intestinal Obstruction, Acute, case of Gastrotomy for (W. H. Cripps) 224
Iodide of Potassium. See *Potassium.*
Iodine, Injection of, Spina Bifida successfully treated by (A. P. Gould) 75
Iron or Steel Chips, value of Electro-Magnet for Removal of, from the Eye (M. McHardy) 128
Ischæmia in a case of Hysteria in a Boy (H. Thompson) . . 5

Jacket, Sayre's Plaster, cases treated by (B. Hill) 80
JONES (Sydney), case of Large Urethral Calculus 23

Laryngotomy, Complete, in a case of Multiple Papillomatous Growths in Larynx, &c. (J. B. Yeo and J. Lister) . . 104
Larynx, Multiple Papillomatous Growths in, extirpated by Complete Laryngotomy; Preservation of Voice (J. B. Yeo and J. Lister) 104
Leg and Thigh, Right, Lymphatic Enlargement of, Fatal Termination of the case (in the 'Trans.,' Vol. II.) (W. H. Day) . 214
Legs. See *Anæsthesia* of.
LEGGATT (Alfred) and W. S. GREENFIELD, Fatal case of Yellow Fever, occurring in London 187
Ligatures. See *Artery.*

PAGE

Ligatures, Carbolized Catgut, cases to illustrate its behaviour upon Human Arteries (T. Bryant) 1
——— ——— of Superficial Femoral Artery (T. Smith) . . 51
———, Tendon, note on (G. W. Callender) 103
Limbs, Contraction of Lower, in a case of Hysteria in a Boy (H. Thompson) 5
LISTER (Joseph), Complete Laryngotomy and Removal of Vocal Cords, for Complete Extirpation of Multiple Papillomatous Growths in the Larynx; Preservation of Voice . . . 107
——— See *Yeo* (J. B.) and Jos. Lister.
Liver, see *Hydatid* Cyst of.
London, Fatal case of Yellow Fever, occurring in (A. Leggatt and W. S. Greenfield) 187
Lupus of the Face treated by Linear Scarification aided by Erasion (B. Squire) 61
———, two cases of (W. Spencer Watson) 201
——— of Superciliary Ridge, Eyelids, and Root of Nose, treated with Lunar Caustic 201
——— of Nose and Cheek, treated with Solid Nitrate of Silver . 203
Lymphatic Enlargement of the Right Leg and Thigh; Fatal Termination of the case (in the 'Trans.,' Vol. II.), (W. H. Day) 214

McHARDY (Macdonald), case demonstrating the Value of Electro-Magnets for the Removal of Iron or Steel Chips from within the Eye 128
McKEOWN (W. A.), case in which Œsophagotomy was performed for the Impaction in the Œsophagus for five weeks of a Set of Artificial Teeth 233
Magnet. See *Electro-Magnet.*
Mal-Nutrition, Follicular (T. Fox) 163
MARRIOTT (Osborne D.), case of Acute Suppurative Synovitis, Evacuation of the Pus, with Antiseptic Precautions: recovery 54
MARSH (Howard), case of Severe Hæmorrhage, following the Operation for Cleft Palate, stopped by Plugging the Posterior Palatine Canal 71
——— and Thomas BARLOW, case of Ovariotomy in a Child aged twelve years 175
MAUNDER (C. F.) two cases of True Subcutaneous Operation for Exostosis 59
Measles, Period of Incubation of (C. Murchison) 241
Metallic Bands, in Treatment of Hysterical Anæsthesia of both Legs (W. H. Broadbent) 13

PAGE

MORRIS (Malcolm), case of Tinea Circinata, complicated with Tinea Versicolor 186
Morton's Treatment of Spina Bifida by Iodine Injection, notice of 77
MURCHISON (Charles), on the Period of Incubation of Scarlet Fever, and of some other diseases (Small Pox, Measles, Hooping Cough, Typhus, Enteric Fever) 238
Muscles of Lower Extremities, Wasting and Contraction of, following Injury to Lower Part of Spinal Cord (J. Aikman) . 16
——— Posterior Crico-arytænoid, Bilateral Paralysis of (F. Semon) 141

Neuritis, Double Optic, in a case of Imperfect Right Hemiplegia (T. Buzzard) 205
NUNN (T. W.), two cases of Cancer of the Breast 98
——— cases of Hammer Toes, showing the relation of this condition to Spinal Mischief 153
——— cases of Epulis treated by Electrolysis 157

Obstruction. See *Intestinal* Obstruction.
Œsophagotomy in a case of Impaction in the Œsophagus for five weeks, of a Set of Artificial Teeth (W. A. McKeown) . 233
Œsophagus, Impaction of a Set of Artificial Teeth in, for five weeks; Œsophagotomy (W. A. McKeown) 233
Os Calcis removed by Subperiosteal Excision (Dissection of the Foot) (T. Holmes) 117

Palate, Cleft, Severe Hæmorrhage following Operation for, stopped by Plugging of Posterior Palatine Canal (H. Marsh) . 71
Palatine Canal, Plugging of Posterior, for stopping of Severe Hæmorrhage following the Operation for Cleft Palate (H. Marsh) 71
Papillomatous Growths, Multiple, in the Larynx, extirpated by Complete Laryngotomy; Preservation of Voice (J. B. Yeo, and J. Lister) 104
Paracentesis and Recovery in a case of Effusion of Bloody Fluid into Right Pleural Cavity, at the age of seventy-six (W. H. Broadbent) 136
Paralysis of Limbs and Speechlessness; Peculiar Phonation, (W. H. Broadbent) 38
——— of Left Limbs, with Rigidity, &c. (W. H. Broadbent) . 39
——— Bilateral, of the Posterior Crico-arytænoid Muscles (F. Semon) 141
Pigmentation in a case of Anomalous Mottled Rash (A. Sangster) 161

PAGE

Pleural Cavity, Right, Rapid Effusion of Bloody Fluid into, at age of seventy-six. Paracentesis: recovery (W. H. Broadbent) 136
Pleurisy, Right, case of, with Effusion: Sudden Death (W. H. Broadbent) 140
Potassium, Bromide and Iodide of, case of Eruption from (H. R. Crocker) 95
———, Iodide of, Eruption, two cases (T. Fox) 40
Pruritus in a case of Anomalous Mottled Rash (A. Sangster) . 161
Psoriasis, two cases; one treated by Prolonged Daily Immersions, the other by Chrysophanic Acid (B. Squire) 90
Pus, Evacuation of, with Antiseptic Precautions, in Acute Suppurative Synovitis (O. D. Marriott) 54

Rash, Anomalous Mottled, accompanied by Pruritus, Factitious Urticaria, and Pigmentation (A. Sangster) 161
Rectum, Excision of the Lower Part of (T. Holmes) 113
Relapsing Fever, Period of Incubation of (C. Murchison) . . 247
Rest, Enforced, in a case of Aneurysm of Left Subclavian and Axillary Arteries (J. W. Hulke) 123
Retinitis, Hæmorrhagic, and its Connection with Gout and Thrombosis of Veins (J. Hutchinson) 132

SANGSTER (Alfred), an Anomalous Mottled Rash, accompanied by Pruritus, Factitious Urticaria, and Pigmentation . . 161
——— case of Abortive Herpes 212
SAYRE'S Plaster Jacket, cases treated by (B. Hill) 80
——— List of Modifications of, found to be beneficial (B. Hill) 84
Scarification, Linear, in a case of Lupus of the Face (B. Squire) 61
Scarlet Fever, on the Period of Incubation of (C. Murchison) { 238, 248
Sclerosis, case of Cerebro-Spinal Lateral (T. S. Dowse) . . 18
SEMON (Felix), case of Bilateral Paralysis of the Posterior Crico-arytænoid Muscles 141
Small Pox, Period of Incubation of (C. Murchison) 239
SMITH (Thomas), case of Popliteal Aneurysm, treated by Ligature of the Superficial Femoral Artery with Carbolized Gut, followed by the Formation of an Aneurysm at the Seat of Ligature 51
Spasm, Muscular, in a case of Unilateral Atrophy (Athetosis (?)) (F. Taylor) 118
Spina Bifida, successfully treated by Injection of Iodine (A. P. Gould) 75
——— ——— Analysis of the Fluid from the Sac (Dr. Dupré) 79

PAGE

Spinal Cord, Injury to Lower Part of, followed by Wasting and Contraction of the Muscles of the Lower Extremities (J. Aikman) 16
Spinal Cord, Unilateral Gunshot Injury to (W. R. Gowers) . 24
Spinal mischief, cases of Hammer Toes showing their Relation to (T. W. Nunn) 153
SQUIRE (Balmanno), case of Lupus of the Face treated by Linear Scarification aided by Erasion 61
——— two cases of Psoriasis; the one treated by Prolonged Daily Immersions, the other by an Ointment of Chrysophanic Acid 90
Steel. See *Iron.*
Subcutaneous Operation for Exostosis (C. F. Maunder) . . 59
Synovitis, Acute Suppurative, Evacuation of the Pus, with Antiseptic Precautions (O. D. Marriott) 54

Tapping of an Hydatid Cyst of the Liver; Sudden Death (T. Bryant) 230
TAYLOR (Frederick), case of Unilateral Atrophy, with Muscular Spasm (Athetosis (?)) 118
Teeth, Artificial, Impaction of a Set for five weeks in the Œsophagus; Œsophagotomy (W. A. McKeown) 233
Tendon Ligatures, note on (G. W. Callender) 103
THOMPSON (Henry) M.D., case of Hysteria, with Contraction of the Lower Limbs, Anæsthesia, and Ischæmia in a Boy . . 5
Thrombosis of Veins, Connection of Hæmorrhagic Retinitis with (J. Hutchinson) 132
Tinea Circinata complicated with Tinea Versicolor (M. Morris) 186
Toes, Hammer, cases of, showing their Relation to Spinal Mischief (T. W. Nunn) 153
Tongue, see *Ichthyosis* of.
Typhus Fever, Period of Incubation of (C. Murchison) . . 244

Urethra, Penile, case of Large Calculi from a Sac communicating with (E. Bellamy) 22
Urticaria, Factitious, in a case of Anomalous Mottled Rash (A. Sangster) 161

Varicella, Period of Incubation of (C. Murchison) 240
Vein. See *Thrombosis.*
Venesection, case of Convulsions treated by (W. H. Broadbent) . 55
Vocal Cords, Removal of; Preservation of the Voice (J. B. Yeo and J. Lister) 104

PAGE

Voice, Preservation of, in a case of Removal of the Vocal Cords 104

WALKER (J. Burnley) case of Left Hemiplegia and Hemianæsthesia, with Diminution of Motor Power and of Sensation, with Loss of Speech, Impairment of Mental Faculties, Ataxy, &c., probably due to Embolism of Basilar Artery 32

Wasting of Muscles of Lower Extremities, following Injury to Lower Part of Spinal Cord (J. Aikman) 16

WATSON (W. Spencer), two cases of Lupus 201

Yellow Fever, Fatal case of, occurring in London (A. Leggatt and W. S. Greenfield) 187

——— ——— post-mortem examination, by W. S. Greenfield . 191

YEO (J. Burney), and Joseph LISTER, case of Multiple Papillomatous Growths in the Larynx Extirpated by Complete Laryngotomy; Removal of Vocal Cords, Preservation of Voice; co-existence of Thoracic Aneurysm 104

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